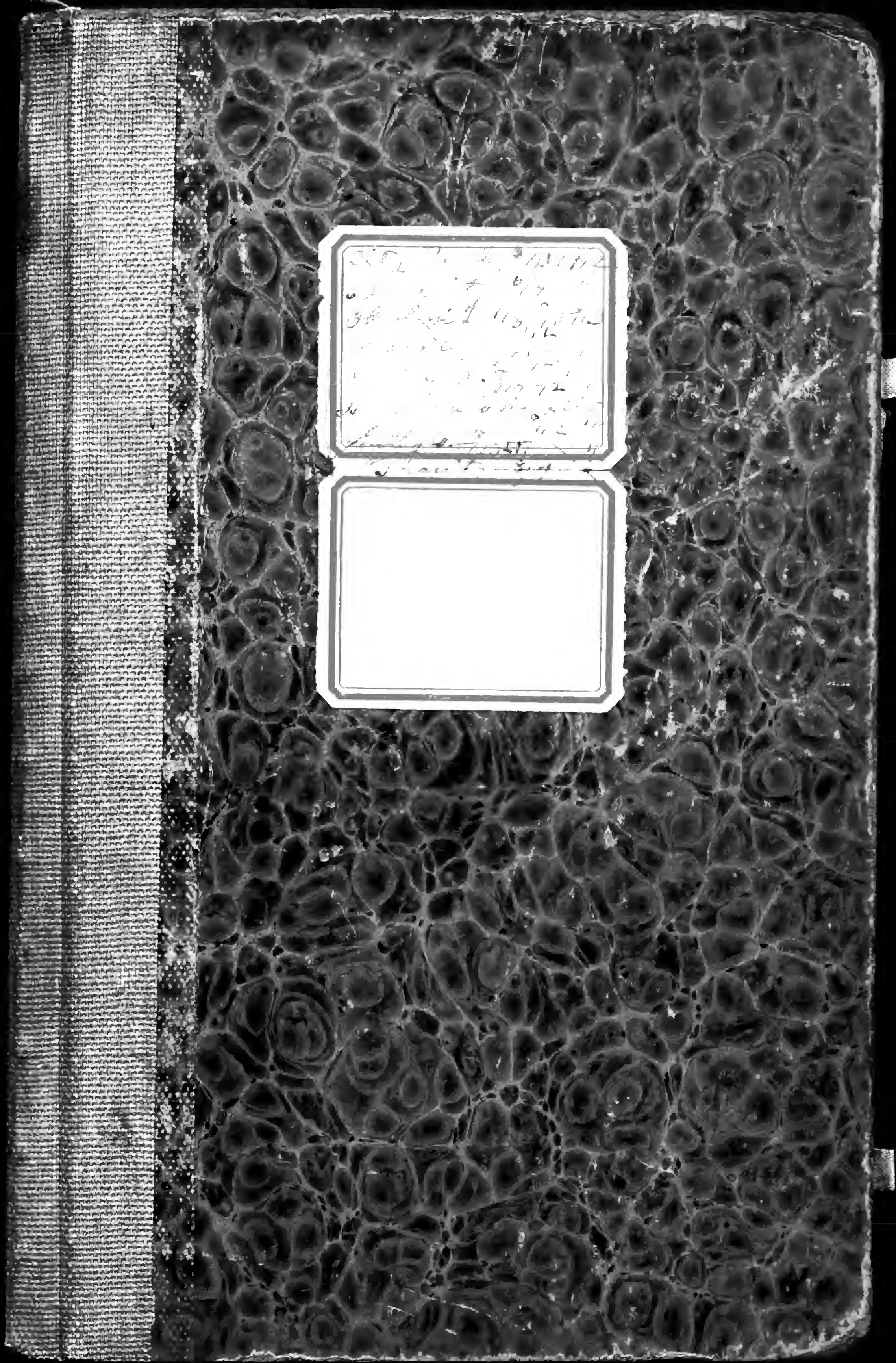


In Boat
Get view E. of sta 1.

Black bear
Wills. Chung

Lowest bottom

Ulmus americana
Juglans nigra
Fraxinus
Green ash
Betula nigra
Salix nigra
Q. macrocarpa swill tree
Carya amara. Pig.
Crataegus mollis
Acer negundo
Gymnocladus dioica
Celtis —
Salix amygdaloides
Acer saccharinum
Platanus occidentalis
Populus deltoides

Upper bottom May 27-1912

Betula nigra
Ulmus americana
Crataegus mollis
Fraxinus
Green ash
5 Quercus macrocarpa
Pyrus malus
Acer saccharinum
Ulmus rubra
Celtis
10 Juglans nigra
Crataegus tomentosa
Prunus
Lowest
Celtis occidentalis
Carya amara
15 Fraxinus nigra
Prunus serotina
Tilia americana
Prunus americana

Bonds

Epipactis

Potentilla canadensis fl.

Carex Bebbii fl.

Heuchera hispida fl.

Tobelia

Selection [illegible]

[illegible] 1

17

1

1

1

11

1

1

1

1

7

7

7

3

1 - Phalaris [illegible] 7

2 - Orcelis [illegible] 14

3 - Andropogon [illegible]

4 - Equisetum arvense 10

5 - Koeleria cristata 0

6 - Poa pratensis

7 - Hypericum [illegible]

8 - Taraxacum

9 - Carex cristata

10 - Equisetum hyemale

11 - Asyneuma campestre

12 - Viola [illegible]

13 - [illegible]

14 - [illegible]

15 - Carex [illegible]

16 - Campanula [illegible]

17 - Helianthemum [illegible]

2nd quadrat [illegible]

1 - [illegible] 1

2 - Carex 3

3 - [illegible] 2 0

4 - Equisetum [illegible]

5 [illegible]

6 - [illegible] 24

[illegible] 2

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Lithospermum [illegible]

[illegible] - [illegible]

Calabrian [illegible]

[illegible]

[illegible]

(Second edition (cm))

Parthenium	analogy with
Chrysanthemum	
Pentanotis	
Senecio	
Senecio	
Senecio	
Senecio	

Dec 11 & 12 19[illegible]

Dec. 11	RR. to [illegible]	2.41
	Clerk [illegible]	1.00
	Supper	35
Dec. 12	RR to Lewiston	2.16
	Breakfast Indianola at [illegible]	65

July & Aug. 1913

July 29	RR. to Cedar Rapids	.50
	~~to Spirit Lake~~	4.46
July 30	Cedar R. to ~~to Okoboji~~	.10
	Spirit Lake to W. Okoboji	.50
	Breakfast at Okoboji	6.00
Aug. 8 -	Room - Miss Annie Warden	
Aug. 8 -	Dinner, Supper & Breakfast } Edwards	2.00
" 9 -	Breakfast	.50
" 8 -	Giddings - Supper - at Edwards	.10
" 9 -	RR. to Montgomery & Granite	1.65
" -	RR. Montgomery to Granite	.36
" -	RR. Granite to Sioux Falls	1.00
" -	Lodging Hotel Teton " "	.30
" 10 -	Breakfast " "	1.31
Aug 8 -	Freight - Annie Warden	.35
	Express - Sud. - Bert Dell Montgomery	
	Freight - Dave Lahey Con - Brooks -	1.00
	Wm. Goodale - hauling	2.00

Dec - Nov [illegible]

Left Sioux City at 3.30 pm for Deadwood [illegible]

Dec 12, [illegible]

Left at about 2.30 pm [illegible] 1 hr late, & reached [illegible] for [illegible] at 8.45 am [illegible] RR. [illegible] 1 year before [illegible] [illegible] (not) [illegible] Just [illegible] [illegible], rather Lonely [illegible] (the [illegible]) Deeber cut. A mile [illegible] in [illegible] to be a bench. Bailey looks [illegible] place. Has no [illegible] but [illegible] Capitol bluffs to Anderson. Put up at Park Hotel. Found co. work. Play now in process of correction ▽ will wait.

Hunter up Mayor Spencer.
Went to Hotel for dinner
& then met Rev Smith,
the Baptist [illegible]
Rural [illegible]
He [illegible]
Co. [illegible]
Mr. [illegible] ([illegible] & [illegible]
[illegible] Cem Co.) to [illegible]
[illegible]
[illegible]
merchant [illegible]
Dr, May, an old gray,
& on Sunday 5 of [illegible]
also dyspepsia —
Mr. Smith was a dam
liar & an imposer.
Before dinner [illegible]
Mr. Wm. J. Lindsley, city
clerk, who promises to [illegible]
well now.
Afternoon hunted up

Mr. [illegible] Newman [illegible]
[illegible]
R. [illegible]
They [illegible]
J. P. [illegible]
[illegible]
Oblong [illegible]
Sold [illegible]
24 [illegible] 24 [illegible]
at [illegible] 24 [illegible] dark
stuff [illegible]
Below 5 [illegible] to 1140 —
Shale.
From 1140 – 2000 limestone
[illegible] with beds of
shale 2-5 ft wide,
limestone is gray & white
mixed —
water nearly at 1425,
Then 50 ft. of green shale,
Then 55 ft. of gray sandstone
[illegible] of St Peters
[illegible] samples of last
at 10-15 ft, and
25-30 ft.
Well is on flat opp CR & P
depot.

[illegible]

Mr. [illegible] Kimball

Mr. Newman [illegible]

[illegible] Dr. Jennings

[illegible] 1550 A

[illegible] 4 30

Atlantic

Nat Dr.

[illegible] Des Moines

of Audubon

with him

Lux [illegible]

Travers

Des M.

Sherman [illegible]

July 31, 1913

On up part [illegible]

Occaloosa Pt.

in, they [illegible]

west of road - as [illegible]

In this lower part the

beach [illegible]

[illegible]

[illegible]

trees

[illegible]

more

Nat

[illegible]

[illegible]

part

In [illegible]

Bromus [illegible]

[illegible] Fraxinus

Ulmus [illegible]

Hydrolea (no [illegible])

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Pilea ~~pumila~~ Parietaria pennsylvanica

Chamaedrin teucrium

Eupatorium ageratoides 17

[illegible] (no) Ilia 9 8

[illegible]

[illegible] (no)

[illegible] (no 111)

[illegible] mollis

Northwest | the trunk [illegible]
out again | only bare rock
[illegible] | straggling
The [illegible] | [illegible]
is nearly [illegible]
Many [illegible] in this [illegible].
The west [illegible]
is best [illegible], [illegible] side
W. side, [illegible]
bare rock.

Level of lake 745
" of bottom 763 "
" top of ridge 782

The bare rocks on W. side show lichens again on W. side of trunk.

The ridge is here protective.
Northward a fringe along shore as all there is.
Dry as ash.

Pinus monticola
Pseudotsuga taxifolia
Pinus ponderosa
Populus tremuloides
Acer glabrum
Prunus virginiana
Ribes [illegible] — Porzius am.
Am. [illegible] — Prunus ce.
Amelanchier
Chokecherry — Prunus vir.
Pyrus sitchensis — Celastrus
[illegible] — Ulmus fulva
Cotoneaster — Potentilla
Ribes lacustre
Salix lasiolepis

16

Smaller plants, all nearly all native. [illegible]

Prairie plants
Symphoricarpos [illegible] — Agropyron [illegible]
[illegible] — Solidago nitida.
Helianthus [illegible] — Solidago canadensis
[illegible]
Helianthella
[illegible]
Artemisia cudriana
Hypericum [illegible]
[illegible] (small)
Artemisia (fine) drawn
Verbena stricta
Cosmoptilum canadense

8

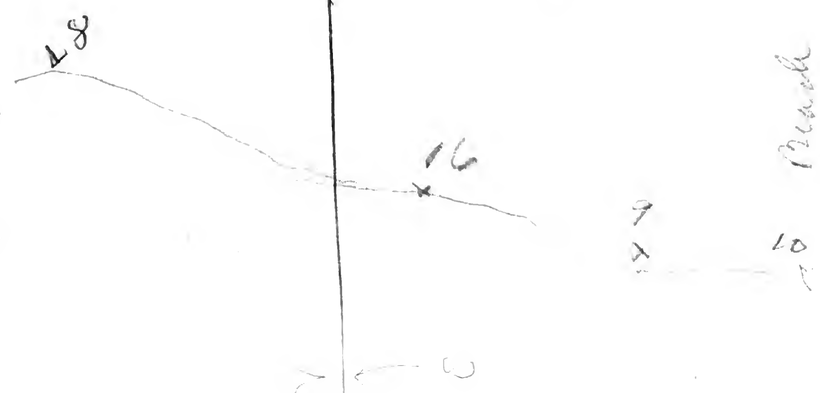
On roadside beside saw pause
sporadically crypt.
also!
Potentilla pensylvanica
Hordeum jubatum
Sonchus [illegible]
Polygonum pennsylvanicum
Artemisia [illegible] dracunculoides
Polanisia
Vernonia baldwinii — (see [illegible])
Asclepias tuberosum (class)
Verbena hastata
Cyperus — [illegible] (see [illegible])
Ambrosia psilostachya
Xanthium
Oenothera biennis
Lycopus (~~not~~ deep, cut)
Lactuca canadensis
Asclepias incarnata
Helianthus grosseserratus (always)
Polygonum (with Hordeum
[illegible] & Cornelian
hypericifolia)
Helianthus petiolaris
Ambrosia artemisiifolia
Aster
Aster novae-angliae
Eupatorium perfoliatum
Iris virginica
Solidago canadensis
Unentered [illegible]
Sacc. radula (see [illegible])

Quest. N of steep bank [illegible]
a higher [illegible] [illegible] a
hill [illegible]
[illegible] line 15 - 18
also [illegible]
trees

On E side, along a rather
steep slope [illegible] a
fringe of trees - [illegible]
green [illegible]
N [illegible]
Embarking [illegible]
a band or [illegible]
but only a [illegible]
[illegible] by the
band parallel to the trees
in a few [illegible]
The bottom point is by
side who stands back in
S w way.

In afternoon started N.
from Cab.
Took sounding of Bulls
Station 1 in Mullen Bay

no. 10 on beach = 769
" 9 - [illegible] = 770
" 16 - [illegible] up = 780
" 8 - [illegible] left = 820
" 7 - [illegible] = 811.
" 5 -



The Tundra along
shore [illegible] of small [illegible]
[illegible] fringe, the
[illegible] (15 - 20 f.t)
but [illegible] outlying bowlders
[illegible] overturn,
along this fringe [illegible]
a basin, an [illegible]
a few [illegible] mostly
[illegible] a few [illegible].
The fringe [illegible]
overturn by a [illegible]
a few straggling stunted
tree walks.
Right at Manhattan the
tree walks run west a little
farther, so that whole point
is covered.

The Manhattan point is now (& probably always was) sandy covered with trees. The pines up the lake are narrow & mostly broken. A few greenash, & quaking asp, salix nigra & balsams. Butternut,

At first point above Manhattan the grove widens & takes in living, but consists almost entirely of trees.

At this first point above Manhattan the bank runs 10-12 ft & above lake & is a bank all along.

Above this point there are a good many rather fine Populus tremuloides, with large number of seedlings springing up.

In the grove: Tsuga Canadensis
Eglantine
Rhus glabra
Ostrya virginiana
Prunus serotina
Tilia am.
Amelanchier
Prunus americana
Viburnum prunifolium (?)
Ribes
Corylus
Prunus virginiana
Ribes
Ulmus fulva
Rhus
Prelea

In woods: (under part of grove above pp 28 & 29 in notes)
Tilia amer
Silene noctiflora
Aquilegia canadensis
Symphoricarpos occidentalis
Aster Drummondii
Rubus occidentalis
Ribes floridum
Thalictrum fendleri
" dioicum
Tanacetum vulgare
Vitis vulpina
Eupatorium ageratoides
Monarda (almost smooth)
Polygonum gigantea

Just above [illegible] cottage and is [illegible] open [illegible]

From steamer:

Two open plains [illegible] between Manhatta & Equalhaven both; [illegible] now, sloping gradually to [illegible].

The opening of the cottage works [illegible] Equalhaven [illegible] in same manner –

also another as upper part of the curve of [illegible] the [illegible] to near [illegible] [illegible]

Then above this front & its great artificial grove, is a low marsh, plain, also trees.

North Queen to head of lake, skipper plant [illegible] piers & starts town Equalhaven.

There are no trees [illegible] at Manhattan [illegible]

There are [illegible] & other [illegible] (white [illegible]).

There is [illegible] grove [illegible] of trees & lake.

The other [illegible] are in [illegible] with [illegible]) & the [illegible] S. of Dragon [illegible] mile one [illegible] now.

The blue green [illegible] [illegible], green [illegible] [illegible] [illegible] walnuts, etc. [illegible] & [illegible] of [illegible] & small [illegible] [illegible] shore [illegible] to me in [illegible] & later also some low green ashes.

above | 1½ ft. above Wanhalla
The [illegible] gravel wider &
more [illegible] & most
of planks in [illegible] page
were [illegible]
open.

At northernmost part of
curve between Equalhaw
& Wanhalla the banks
are lower & trees very
scarce.

This is only a depression & again
the banks come up 15-20 ft,
& there is a narrow border of
trees, only below bank

Towards Equalhaw this
widens in 2 or 3 places where
ravines run down.

Alt. of bank at
Equalhaw 765
Top of bluff 785

At Equalhaw The
gorge [illegible] seems
[illegible] & contains
a long [illegible] (many
3 ft [illegible] 18 in &
[illegible] ft.)
At equal[illegible] point
the gorge [illegible] at
least [illegible]
above [illegible] two hundred
The gorge [illegible] bottom
to [illegible] feet banks
slope to 5 - 7 ft. a few
large rocks above.
There are artificial [illegible]
one [illegible] giant [illegible]
bottom banks & some
5 & 8 in.
above [illegible] valley [illegible]
the [illegible] mount [illegible]
a more [illegible] shore
The shores are low.

These green ashes are
mere branch, [illegible]
[illegible] stunted
Right at new [illegible]
[illegible]
(about) to 1918 & (a)
it [illegible] trees stands
a little [illegible]
at (a) there is a broken
fringe of greenish, yellow
peach willow, [illegible] elm (?), [illegible]
probably [illegible]
at foot [illegible] stretch of
lake.
That bare bank goes
somewhat to SW. & is
parallel & mud [illegible].
A drain [illegible] SW.
The fringe of trees at (a)
is on an elevated ridge
evidently formed by
lake. There is a
small swamp west of
this ridge

some of them lies [illegible]
[illegible] (80 ft)
at (b) There is [illegible]
[illegible]
bank [illegible]
[illegible]
The [illegible]
rapidly sloping [illegible]
Trees [illegible]
with a [illegible] to SW,
a [illegible]
in [illegible]
land as [illegible] fairly
well.
Above (b) a [illegible] of
lake [illegible]
From (b) down it is very
boggy.
Below (b) is a rapid
rise, & then a
higher irregular bank
runs along with larger
trees (mostly elm) below
edge of bluff.

Along this border to
Equalizing & from:

Salix [illegible]	
Cottonwood	Populus [illegible]
Salix [illegible]	
[illegible]	
Plum	Prunus am.
[illegible]	Quercus [illegible]
Red elm	Ulmus fulva
Chokecherry	Prunus [illegible]
Poison Ivy	Rhus Tox
Hackberry	Celtis occ.
Hickory	Carya ovata.

An attempt to grow trees
& grapevine [illegible] wild bank
on plain [illegible] W. Glade (to
lake) is not very successful.

W. of [illegible] lake a group
of [illegible] on bank
of bank, [illegible] protected
by artificial [illegible], mostly
of soft maple.

This is of [illegible] little [illegible] bank.
Only a very few [illegible]
along this [illegible], & the [illegible]
[illegible] [illegible]
[illegible]
Below [illegible]
which [illegible]
is [illegible]
[illegible]
[illegible]
[illegible]
Trees [illegible]
[illegible]
There is a [illegible] of [illegible]
(4 trees) [illegible] of Elm
Maple [illegible].

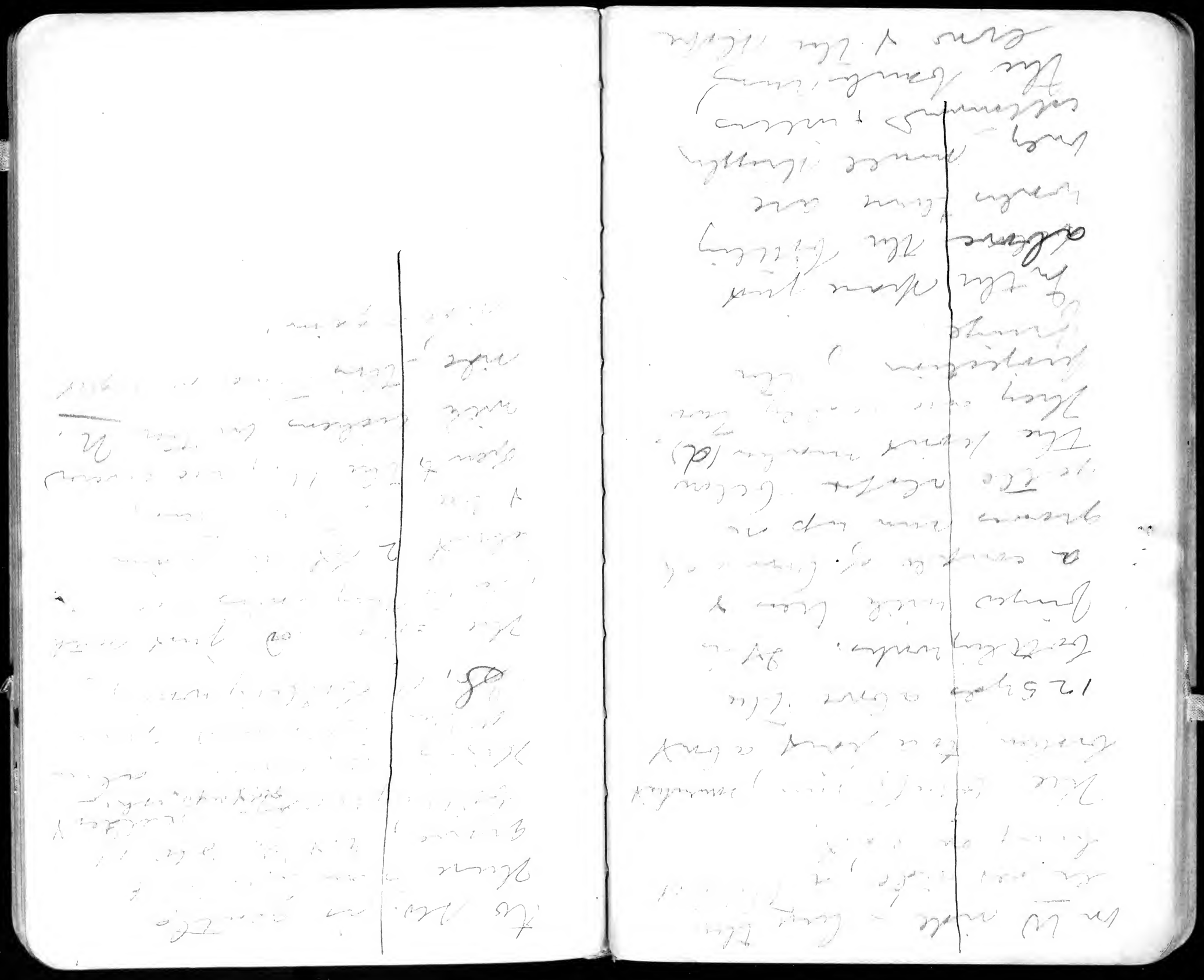
Opposite [illegible] group
There is a [illegible]
Below [illegible]
There is a [illegible] of
[illegible] W. [illegible]
[illegible]
At (C) there is a [illegible]
group of [illegible], [illegible]
by planting [illegible] maple, elm

The bank at & below
(C) again [illegible] somewhat

On E side the rock
magnificently [illegible] lichen
The [illegible] is known as
a [illegible] (see G[illegible])
This is Eagle Point
From another hitching
here
S & W, there is a
big cottonwood grove.
The cottonwoods near shore
have many lichens on
E side. (see lichen)
Small cedars probably
scattered along by
birds from O(C) trees
near not.
Still of big cottonwoods in
a grove [illegible] supply
rock lichens [illegible]

[illegible]
just [illegible] grove [illegible]
slope [illegible]
[illegible]
a little [illegible]
bluff [illegible]
in [illegible]
along [illegible]
fringe [illegible]
[illegible]
[illegible]
slope [illegible]
The [illegible]
a [illegible] distance [illegible]
The bluffs [illegible]
higher & there is a
[illegible] of trees,
with quite a grove on
slope

At (d) the bluff is higher
(near lake 770 800) & there
[illegible] come to top of
bluff & have lichens



Aug. 1st 1913 (Fri.)

Went to [illegible] of L.D. Lake.
Day fine & [illegible].
Left [illegible] E. [illegible]
The [illegible]
of a [illegible]
[illegible]
Down [illegible]
Arnoldi, Sandiven, Ostiga,
a [illegible]
well [illegible]

Top [illegible] 735
Water edge. 690

The frize, along lower bank
extends [illegible] spruce
[illegible] [illegible]
[illegible] accordingly.
A few straggling birch also
in angle W. of angle of rocks.
Small birches E. of angle, exposed
all around, have lichens all
around trunks, many on
exposed roots of birch on bank

The timbered part in sec. 1 is rather better in this part, running E.

In ~~sec.~~ 1 the part, gone up and down lengthwise, practically through + on ½ mile of it was very open, as the bank, 8–10 ft. high.

Below the bank is a barren mixture

This extends S. of ½ mile line.

Among these they are,

Dermatella canadensis
Artemisia (Gray)
Yucca angustifolia
amorpha canescens
aster ericoides.
Zizia aurea
~~Lepidium~~ Sisymbrium "yellow".
artemisia ludoviciana
~~Helianthus scaber~~
Symphoricarpos occidentalis
Solidago canadensis
Rhus glabra (small)
allium canadense
Schizachyrium scoparium
Elymus canadensis

Antennaria campestris
Stenanthium robustum
Allium canadense

99–07

sec. 1 timbered

Some bur oak (small) a little ash ½ mile back

Among these prairie forms were some

Zizia aurea
Aquilegia canadensis
Agrimonia gryposepala
Geum triflorum
Aster ericoides

Opposite the gone over bank only 4 or 5 cottonwoods, 1 elm, 1 maple, about to ½ mile S. of a creek.

708
682
26 A.

All this narrow part is often inclosed by woods

It seems to be mostly [illegible]
[illegible] to find.
[illegible]
The wood [illegible] a little [illegible]
[illegible]
On S side of [illegible] there is
a [illegible] of Trees [illegible]
over 2 [illegible]
Along the [illegible] edge
of [illegible] 300 yds from the
The yacht club point is just
N. of [illegible]
Stube Eagle Rk
The Greek temple is just
below [illegible] line [illegible]

680 to 710 = 30 ft high.

Epimedium, may this
may have been introduced
Young seedlings appear [illegible]
Point (i) is Yacht Club point
& is above sec. line a little
From this point the Greek temple
shine is rather low but
rises more or less rapidly back

From S side [illegible] temple
ridge [illegible]
On ridge second [illegible]
[illegible]
Top is [illegible]
Along [illegible] —— [illegible]
[illegible] [illegible]
almost [illegible] [illegible]
[illegible]
just [illegible] [illegible]
about [illegible] way bottom is [illegible]
The [illegible] [illegible] is about
100 yds & is [illegible]
All along where [illegible]
[illegible] came down the
front is down
The [illegible] are more
xerophytic & [illegible]
[illegible] bunch (often)
or in [illegible]
j is just below ½ of line
in sec. 12.
Several of these small pines [illegible]
below Greek temple (in 1st 2 [illegible])
saw Andropogon scoparius
[illegible] fuscatus
[illegible] [illegible]
[illegible] [illegible]

Sec 5, part sec. 1

Drove

sec. 1,

sec. line

sec 12

solidago rigida
aster ericoides
aster erigeron
solidago nemoralis
ambrosia artemisiifolia
Artemia (grass)
Elymus canadensis
amphicarpa comosa
carex festucacea

Helianthus grosseserratus
Panicum scribnerianum
aster laevis
Apocynum androsaemifolium
Solidago
Rudbeckia laciniata
Solidago canadensis

To a little below this point runs by line [illegible] the [illegible] [illegible] this point above [illegible] [illegible] within 12

The [illegible] are 20 ft. (grass). Then below [illegible] shore [illegible] a little, [illegible] [illegible] [illegible] along [illegible] section [illegible] [illegible] 30 yds [illegible] shore [illegible] just below that widens to nearly 100 yd wide, [illegible] the [illegible] and 12 to 20 ft [illegible] there is a [illegible] built of [illegible] [illegible]

Below [illegible] there is little. There [illegible] face to SW & and the footprints of the [illegible] [illegible].

The "wallies fortin" just above Hayward's Bay is about higher.
The whole shell [illegible] is bombing.
At Hayward's sandy beach, Southern turns Hayward's the beach runs 100 yds or so & is mostly very clean bar rock, & a few odd trees only afterwards.
(Would this suggest explosion made, means protection?)
The gun runs out just N. of bend of Hayward's Bay & the bank runs down.
At beach the slopes are low & slope back very gently.
The beach is practically stones,

Below Hayward's the trees start in [illegible] strongly inclined & the bank [illegible] higher.

Saw the "knobbly explosive" of German fruit at Hayward's on the sandy beach.

Dust [illegible]

[illegible]

Nip & Tucks Table.

At A There is a [illegible] bank on the side of a rough line is quite a gone, muddy brook.

The timber was 350 yds S of SW. part of Cactus Table

For blocks see inserts see next page.

Quercus sp

Corylus sp

Parietaria pensn

Humulus lupulus

Cannabis sativa

Prunus

Ulmus alba

Fraxinus sabolifera

Fraxinus

Ulmus

Populus

Amphiscopa monoica

Verbena

Carex cordifolia

Celtis

Hackberry (Celtis)

Ulmus sp

Red Elm

Rib fern

Bur Ash

Box elder

Willow

Poplar

Cottonwood

Sycamore

Ash

Pecan

Red

Elm

Ulmus sp

Parietaria pensylvanica

etc.

Here are

rocky

banks with usual

flora

Here are

rocky

banks, the bottom always

in front of such banks. This

is the same everywhere along the lake.

[illegible] inequality gives effect of [illegible] of gale

a gravel N.E. [illegible] that [illegible] under

S.E. side of lake stone boulders + gravel ridge – ice-shove. Stock stood on this in winter from N.W. to keep off bugs

a fence nearly in woods with dead trees – trampled by cattle

Collected specimen with other long (common) also [illegible].

Along road in sec 17 & 18 there are bands & ridges, & little ridges in the wooded part.

Returned to lake below Haywards Bay.

[illegible] 10 [illegible] 16

[illegible] alone

10-15 [illegible] high [illegible] wood

Between [illegible]

[illegible] & [illegible]

along [illegible]

acre [illegible]

In place [illegible] 712-956

alone here + [illegible]

quite rough + [illegible]

(bank) [illegible] 44 ft.

above water. Then rise east inland

At [illegible] point 762

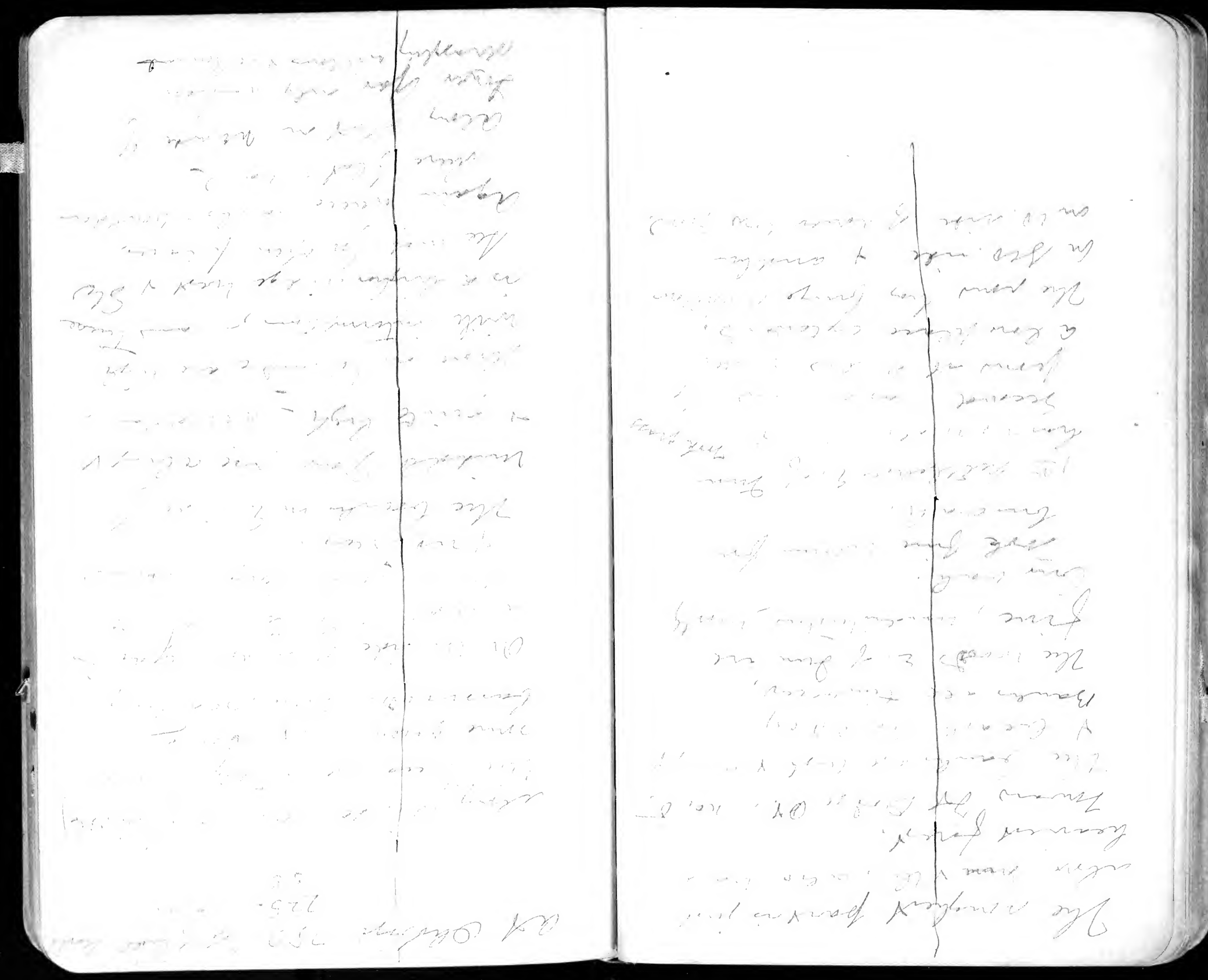
Drop just S. to 740

[illegible]

~~[illegible]~~

Water level 718

Just below the [illegible] bank become a [illegible] & [illegible] sandy & pebbly.



A high bluff runs W. of town for [illegible] feet in [illegible]. The outlines are [illegible] the [illegible] in the [illegible] strata everything in lower part of Middle Gap [illegible] the gap in a [illegible]

Level of lake: 730

Top of bluff W. of town Jan = 771.

The latter is a [illegible] much lower than the west & south & probably abruptly to lake

Upper part of gorge is formed [illegible]

The gorge W of such is low & runs to hills

N. & NW slope of [illegible] gap is flat & thick.

The lower hills near upper part of west side

N middle part are about 753

[illegible]

Top of [illegible] N.W. = 775

West of [illegible] are RR = 755 at road intersection.

From lake a profile of the Jan

top of trees

Jan

[illegible] the gorge near Jan is higher.

Record of trips 1913

[illegible]

[illegible]

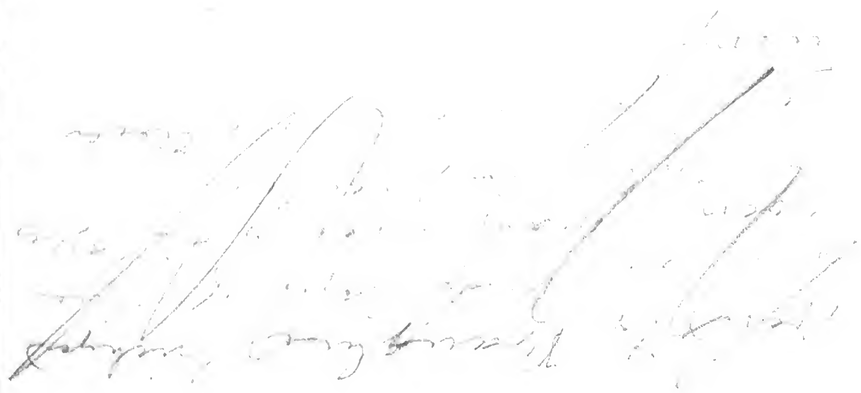
E. side W. [illegible]

Elm creek

E. side - E. [illegible]

W. side [illegible]

N. & E. [illegible]



This morning in night or [illegible]
The [illegible]

There is a vent of lava in the big lava, on E. side, higher than vent, probably 20-30 ft above lower bottom.

In vent there is a vent of fissure lava, ~~[illegible]~~ the lines have all been yellow lava.

On S. slope of East hill in East end of rev. 7 I could see blue lava near base of slope & more yellow lava on top.

N. slope also shows gray lava below - iron tubes.

At center of S. side fac. 6-80-36 - on hill facing N. yellow lava appears on top, with many small nodules. The greater part of the slope, almost

to base, shows [illegible] iron tubes.

[illegible]

night.

Near S.W. [illegible]

[illegible]

along [illegible]

[illegible]

middle [illegible]

Cordland [illegible]

[illegible]

[illegible] 23 on [illegible] lava is almost [illegible] yellow or reddish [illegible]

Toward river [illegible]
and the [illegible]
New Harlem [illegible] patch of
very [illegible] Amaranthus [illegible]
[illegible]
pasture [illegible]

218 Gr NW. [illegible] 29 [illegible] 38
a cut in [illegible] 11 [illegible]
then 3-5 ft [illegible] shown [illegible]
in inner half, a [illegible] 30 ft,
with a [illegible] layer
above, [illegible] (under)
lower. (See sample)
The rimson is often gray
modifies type (see sample)
The fossils is clayey.
The layer above (a foot or
two?) is laminated, darker
steaks interbedded & grades
up into what looks almost
like a gray lower.
Near top of hill, & on top,
a layer of yellow loam [illegible]
thick (possibly 4-5 ft) which
at top shows small nodules, not
very abundant.

[illegible]
with [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
the [illegible] side. It is very [illegible]
on top of [illegible]
It is somewhat [illegible] [illegible] almost
lower [illegible] [illegible] 10-17 ft. high
[illegible]
& 2 [illegible]
[illegible]

[illegible] 3-4 feet.
[illegible]
[illegible]
[illegible]

The [illegible] law [illegible]
[illegible]
[illegible] Red [illegible]
[illegible] Vile
[illegible] Walnut
[illegible] Pinus americana
[illegible]
Elder [illegible]

Fine lunch in S. plant
S. of C. & W.
The marlin tusk was
found just about opposite
1st telegraph hole N. of
S. end of E. side of cut 5
along C. & W. near
depot. (S.)

Aug. 17, 1913 - Sun.
Drove from Defiance with
Wife
at NW. [illegible] city road
a cut in [illegible]
The column, as [illegible] right side,
about 6-7 [illegible]
[illegible]
The [illegible] part
Kansan [illegible]
[illegible]
visible
The [illegible] part of [illegible] plant
shows a yellow non calcareous [illegible]
with [illegible] [illegible]
[illegible]
[illegible] south side of the [illegible] from
near base of slope, [illegible]
[illegible] in east cut about
7 ft. [illegible]
On N. slope - at corner with
[illegible] section shows gray
layers at base, yellow above.
Three smaller cuts in yellow
layers appear north. This part,
to below middle line of sec. 8, is
rough, Farther north the slopes

In the afternoon I
walked out along the W.
[illegible] E. side of [illegible] is where
a Mastodon [illegible]
Sand & [illegible]
The [illegible] here are gradually
overgrown with Melilotus
alba, - a good [illegible]!
Harlan station = 1200.
Down the track are the
Swinehart cement works.
The sand is brought from
the Platte in [illegible].

Over in sec. 20 on [illegible]
40 - [illegible] red clover
dominant. This was formerly
full of [illegible] but
now blue grass [illegible] pasture)
The groves in sec. 20 were formerly
all [illegible] cleared [illegible] —
stumps show.
Also found: [illegible]

Agropyron [illegible]
Koeleria [illegible]
Bromus [illegible]
[illegible]
[illegible]
[illegible]
Carex [illegible]
Celtis [illegible]
[illegible]
[illegible]
Rhus [illegible]

In the E. 40 the [illegible]
is dominant.
This grass [illegible]
N. slope
[illegible] is [illegible] on
N.W. slope. I can't believe
that [illegible] is [illegible]
connected.

Aug 13 - 1913 - Wed.

Left for Manila at 5.55 AM. Missed connection at Manila and waited until 2:15 PM for freight. Then took one to Pasay just in time to miss the 3.40 PM. Train for Harlan & I had to wait until about 9.00 PM for a return C. & S. W. Train.

Saw Miss Rogers at Pasay. Reached Harlan after 10 & put up at Harlan Hotel. Very hot! Quiet!

Aug. 14, 1913 - Thur.

Spent day in looking up well-diggers, working up plats, etc. Found Stephen out of town, but saw Ed. White.

Aug. 15, 1913 Fri.

Spent the day in work on township plats and in planning itinerary.

Aug. 16, 1913 - Sat.

[illegible] Bangkok [illegible] 8 [illegible] found [illegible] any [illegible] [illegible] A few shells were [illegible] at Shangh[illegible] found. [illegible]

[illegible] saw [illegible] appears to be [illegible] machine.

[illegible] Harlan Ransom Hoffman [illegible] McGraham

Much water pm (a). Also found [illegible] man, Zonitoides minus [illegible] & Bifidum [illegible] Study this in detail.

[illegible] [illegible] out

Then [illegible] Craig,
all the country [illegible]
[illegible] undulating prairie
Some [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] out
From Craig on few cuts
appear the RR following
a valley.

Reached Sioux City at
6:10 pm Went to West Hotel
& there met Dr. Stephens
& Mr. Smith, secretary of
the Sioux City Academy of

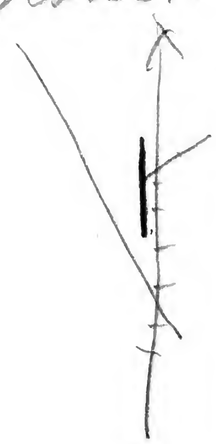
[illegible] [illegible] [illegible] been
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible]
[illegible]
[illegible] [illegible] [illegible]
[illegible] which [illegible] [illegible]
we then [illegible] [illegible]
~~[illegible]~~ [illegible] [illegible] from
[illegible] [illegible]
R[illegible] [illegible] [illegible]
went [illegible] [illegible]
hotel at about 11.

then long cut with
drift (regular line)
between [illegible]
S to find looking [illegible] uniform
(like [illegible])

Mechally

at [illegible]
long [illegible] and
[illegible] drifts.

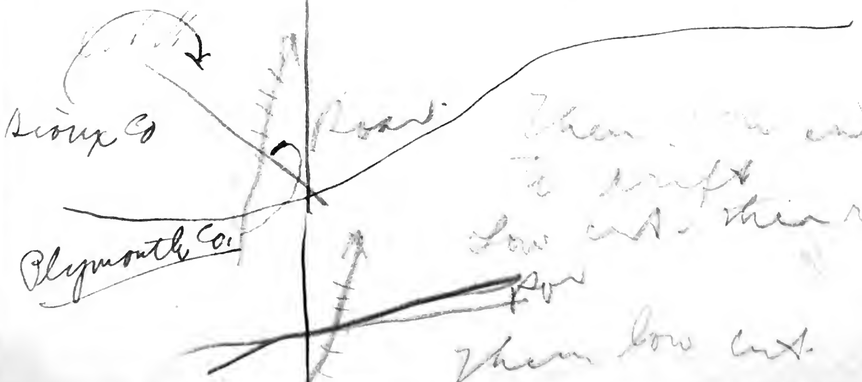
next -
Cross room



going out heavy -

another long draft heavy
cut above & building below -

long cut drift heavy line between
& drift cut
= quite regular,
[illegible]
[illegible]
[illegible]
will run
curve.



Then [illegible] cut
& drift
Low cut - then road.
Then low cut.

Visited until 4.20 pm
Took dinner at Sioux.
I am here now,
and found it an
enjoying trip. The
has been at the Hermsting
farm about 3 miles up
the Big Cow. The
farm [illegible]

A young man was
drowned just after dinner,
as I was about to leave
train his wife (with baby)
who was on a visit to
her parents, returned. She
had been notified that they
were working with him, but did
not know that he was dead.
Her wails were heartrending
when she learned the truth.

Left at 4:20 pm, via
4 v out off line of C.N.W. for Sioux
City.

Along [illegible]
[illegible]
Cultivated [illegible]
[illegible]
[illegible]
diverge
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
wash (for [illegible])
Then crossed
Another [illegible]
[illegible]
for [illegible]
[illegible] fair [illegible]
& stuff [illegible]
line of [illegible]
[illegible]

Another [illegible] short distance
[illegible]

On return

no. 7 a =	902
~~no 7 =~~	~~890~~
no. 6	870
	900 (min. 897)
no 5 Rock	[illegible]
no 4 =	886
no. 3 =	890 at hole
no 2 =	
no. 1 =	
Mrs.	no 1 873 in fen
	" 2 820 in small spring in woods.
	" 3 - 728 - On top of bank under bass wood.
	" 4 - 700 - In bank.
RR bridge	698

8 2
6 40
8

Spent night at Brés.

41

Day 12 Jus.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

day [illegible]

it [illegible]

[illegible]

Sent out [illegible] of people [illegible]

[illegible]

[illegible] to [illegible] a [illegible] frame just above [illegible] bridge above Belvidere.

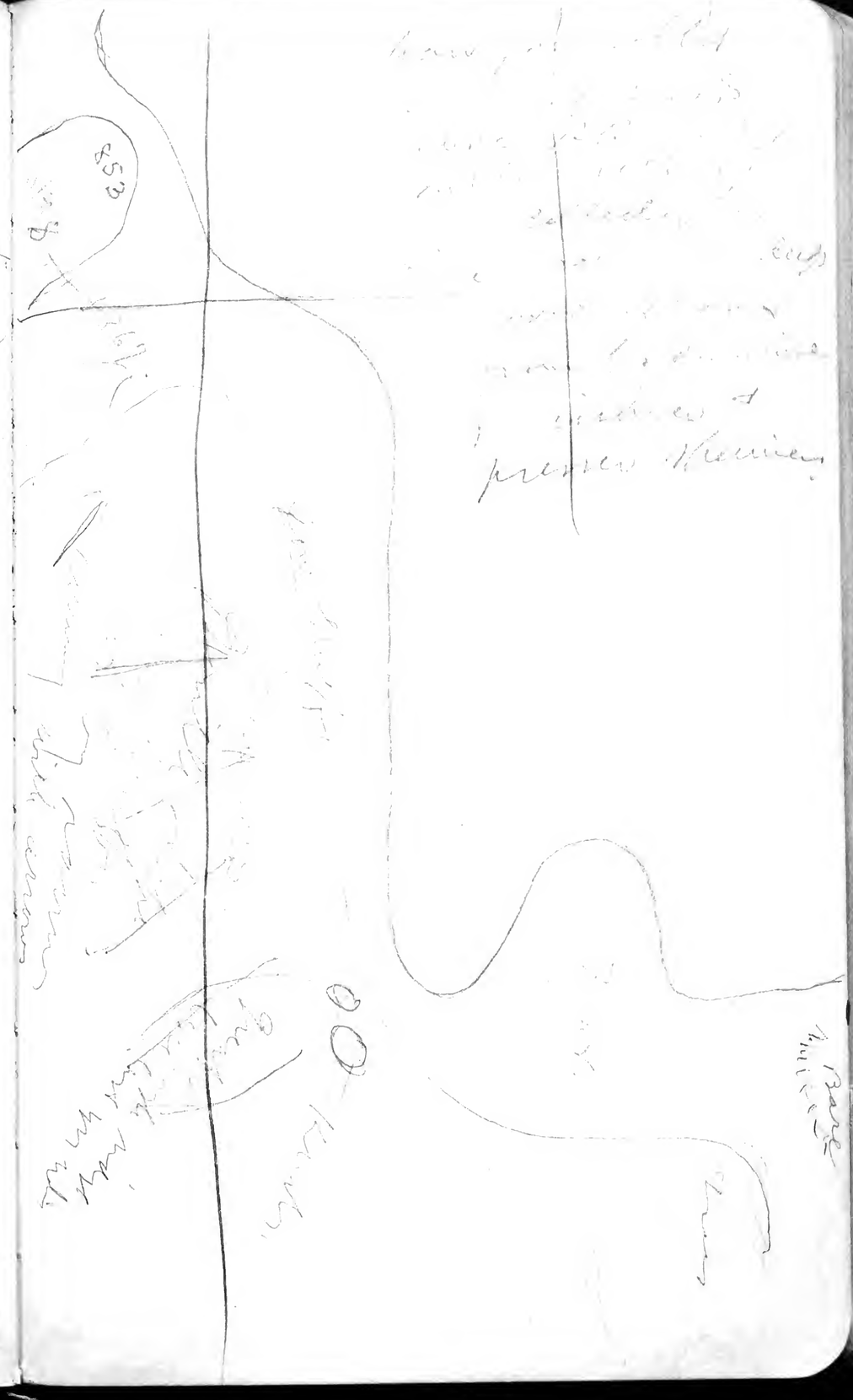
Left camp at 10 am. and reached Hawarden at 10.45. Ella, Mr. & Mrs. Jack Armstrong, & Mr. Stone were at depot.

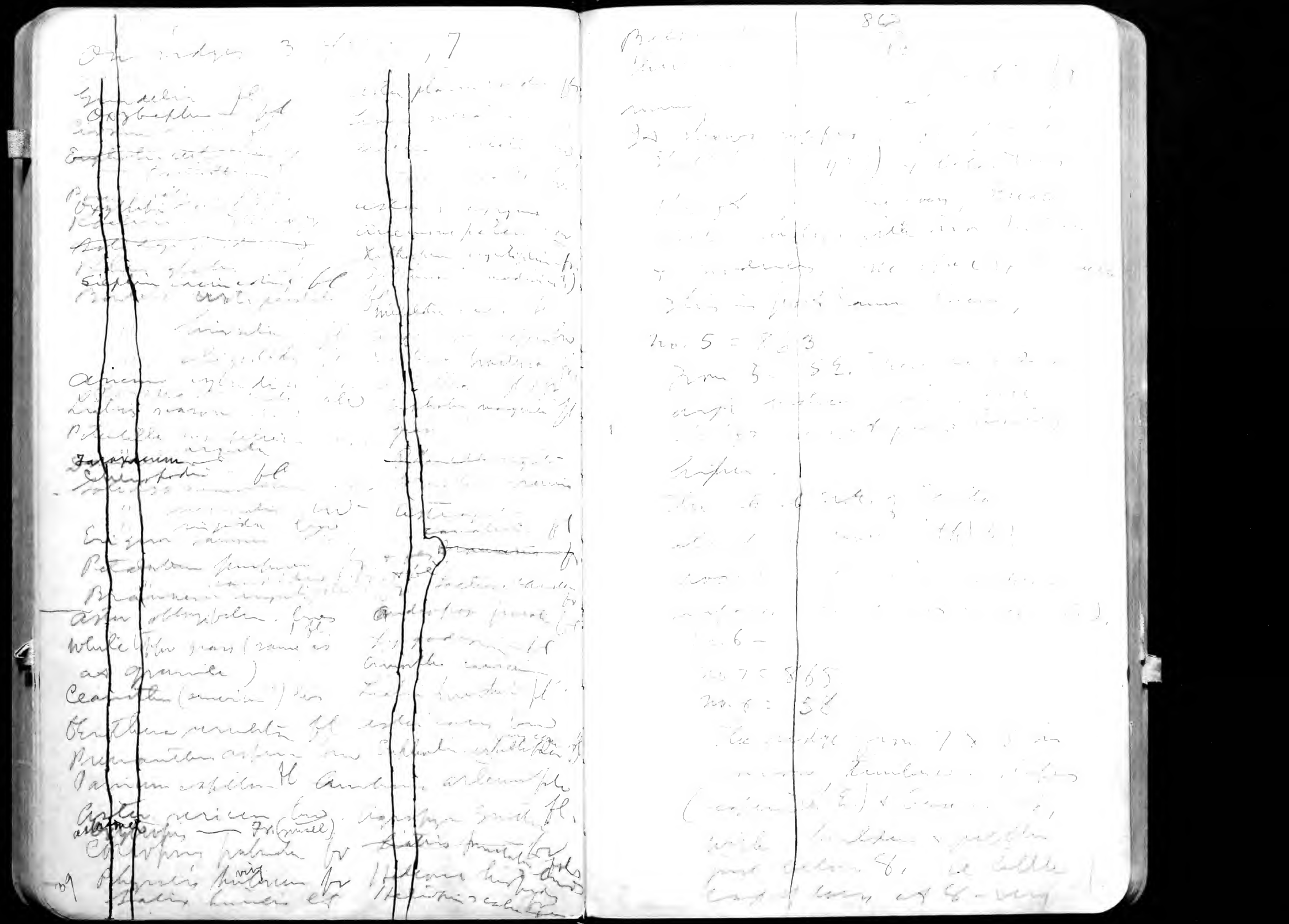
small, & [illegible]
been [illegible]
Nodules [illegible]
at [illegible]
Tomorrow [illegible]

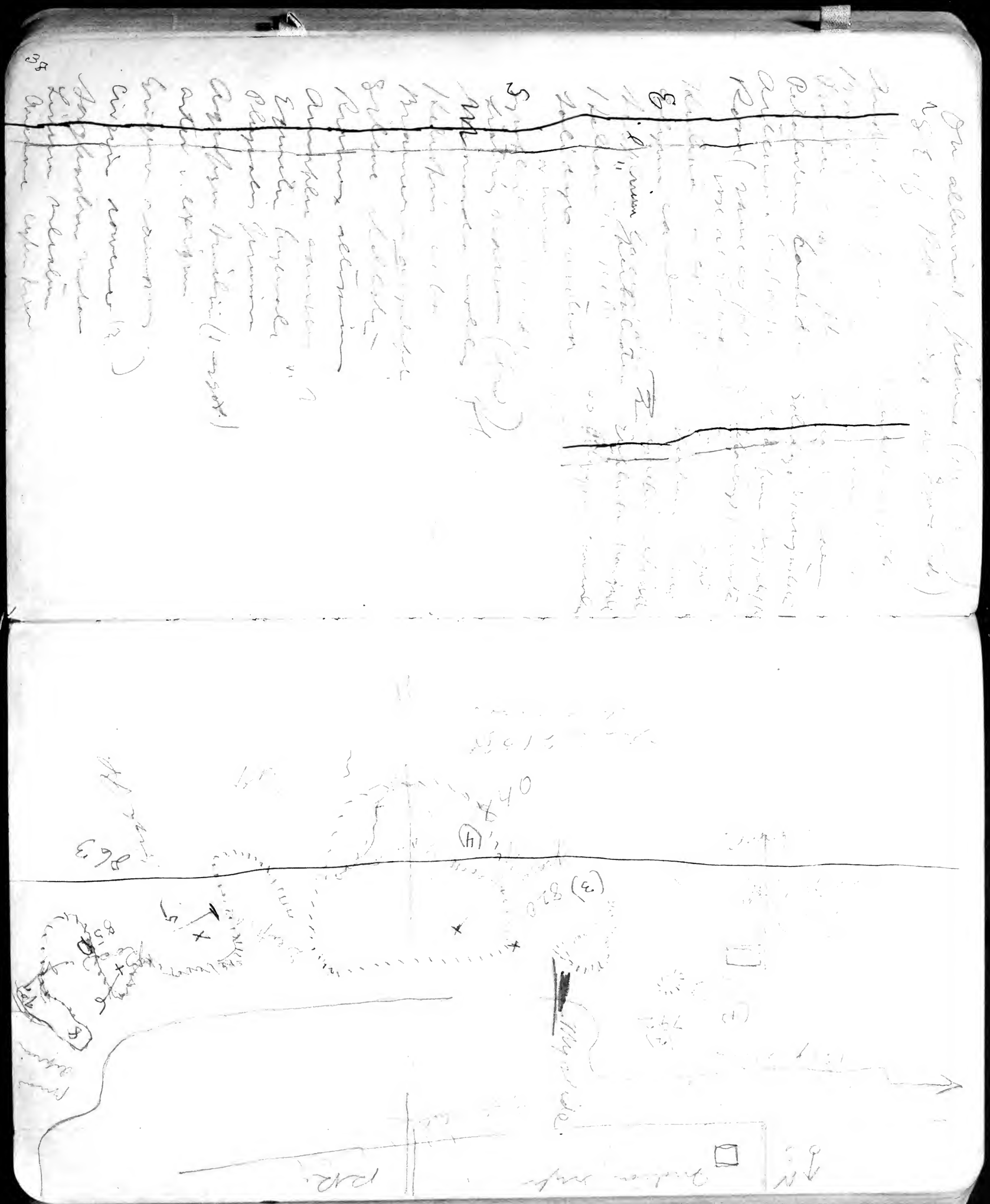
Photo 7 [illegible] is a
fair [illegible]

E. from (7) (8) There is
a [illegible] out by [illegible]
[illegible]
to the [illegible]
On the E. side of it is
the big, high, [illegible]
East [illegible]
notes

Photos 5 & 6 looking
N.E. from near No. 7
Photo 11. looking [illegible] N.
from [illegible] 8.
Photo 12 - looking N.E. from
East point







Mt. Town Ck

Beaver Ck

surface is much rougher

Down Town Creek

these undulations & low draws continue

Bert's house - 1 51 842 (837)
" 1 - 21 770 (824)
" 3 - 7½ 670
" 4 - 640

these readings were taken Monday.

Rainy in afternoon and I spent it at Bert's house, writing letters, etc

Argill, Mon. 1913

Met in forenoon & then dinner went up to Bert's & walking & worked on hills on west side along the Big Lake

At [illegible] 662

[illegible] & bridge 6[illegible]

about [illegible] of [illegible] in [illegible] & on [illegible]

River [illegible] 631

with elevation of hills on [illegible] side of Big Stone.

1 = [illegible]
2 = 792
3 = 820
4 = 840 -

gradually to [illegible]

On not there in a mile. I dug in [illegible] & took sample. It is [illegible] & not [illegible]

Aug. 10, 1913 - Sunday

A gloomy, cloudy, [illegible] morning [illegible] wind [illegible], etc.

At 1 PM. left for [illegible]. Country rough to S. side of county. Then [illegible] & long draws to S. E. & S. W. The mature drifts. There are elevations (rounded & rather low) between these draws this makes mature undulating. Only a few swamps.

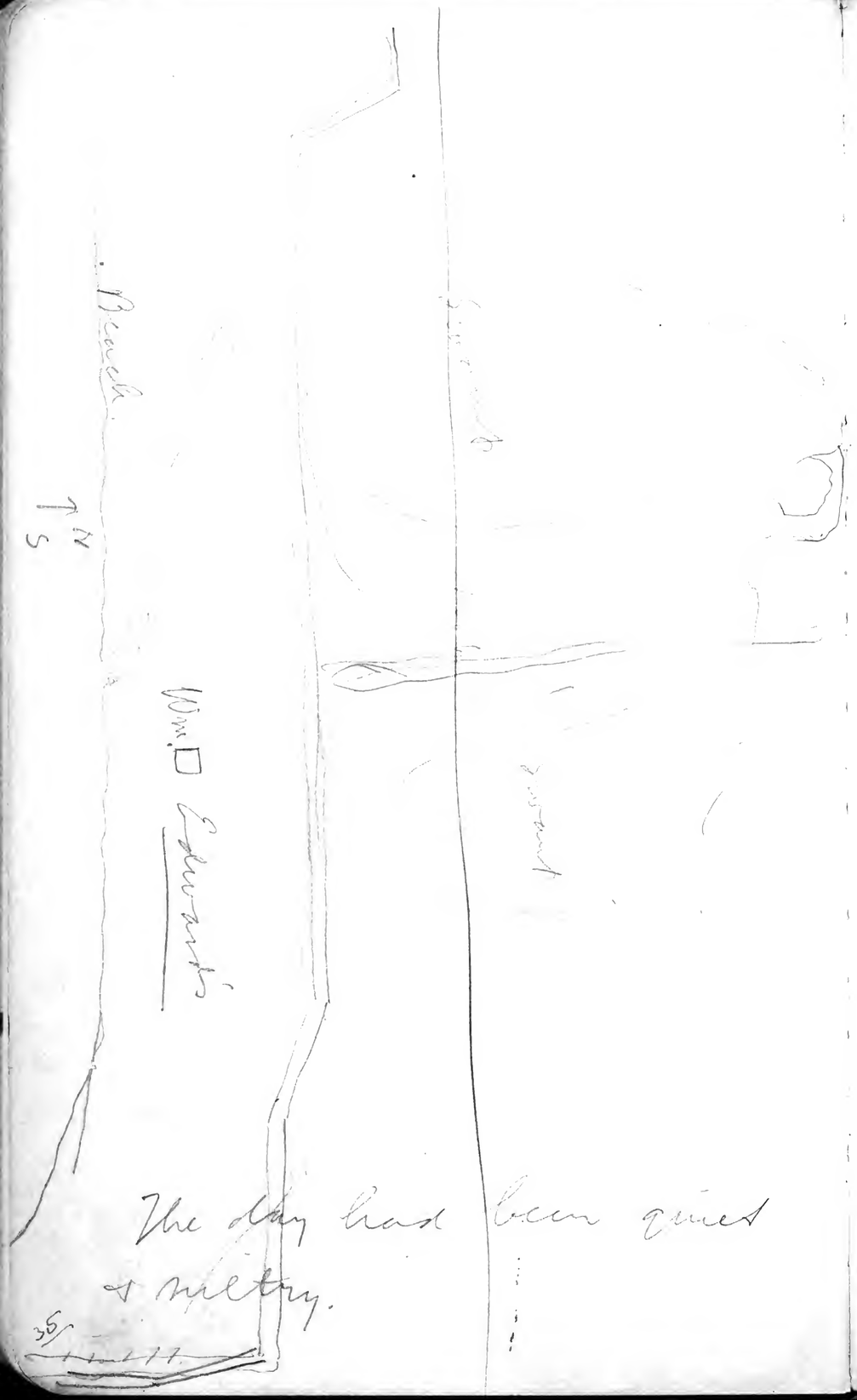
Southward towards Harrisburg the plain is somewhat flatter but shows very little evidence of ~~xxxxxx~~ drainage.

Northward from Harrisburg this plain extends in gentle undulations. Eastward all along the surface is more undulating, [illegible] and [illegible] & W. [illegible] side. Plain is [illegible] undulating with shallow [illegible] S. or possibly [illegible] S.W.

Very little [illegible] marked [illegible] where appears here or there are small creek like drainage channels.

Plant life on this plain gives no evidence of swampy conditions [illegible] towards Canton the surface is again more undulating rougher & the draws more pronounced.

Very few small [illegible] places anywhere.



The day had been quiet & sultry.

35/

Aug. 9 - 1917

[illegible]

[illegible] water [illegible] side of Michigan river. [illegible] Bank [illegible] feet W. [illegible] grass [illegible] leaves of yellow Dove Lily. [illegible] the bond [illegible] many [illegible] an island.

Got wet.

Left at 7.20 P.M. for Niagara Falls. Put up at the Zeem Hotel, - the old Dacotah House.

Picks up
Lynn
Dec
East
All
the banks
irregular
The N.E.
Cranzlin
gravel
east,
The
at

N. of R.R. a large
double lake connects
W. of Sec. line.
The W. side (& S. of W.
lake) is rough, mostly
mountain, & the banks
and higher places
are covered with low
oak trees chiefly

The ridge
N
Ruin
Globe
along
N.E.
left long
Prairie
circular
R.R.
part
lake.
These lakes were
evidently all connected.

and islands of prairie
in the fields).

W. side Center Lake -
Top of bank 1110
Water 1094
16

The banks are abrupt, beach bouldery
Prairie [illegible] flattish bank, [illegible] rises 8-10 ft. [illegible] S.E.O.
above this grove a bouldery ice-shove ridge. 4-5 ft high. fine.

On N. shore (west) a high bank, 1117, is abrupt & bears good fringe of bur oak with a few green ash some on top. Some Am. elm, Vitis) Ostrya,

[illegible]
[illegible]
[illegible])
[illegible]

A large [illegible]
green ash, [illegible] elm.
[illegible]
[illegible])
[illegible]

A high bank, ice shove ridge [illegible] about.
Towards [illegible] scattered bur oaks,
[illegible] 2 [illegible]
as a ridge 5-6 [illegible]

a grove of bur oak & a few green ash. [illegible] ([illegible])
East [illegible] of the banks are high (estimated 20 ft) & crowned with a broader grove of bur oak, etc

2nd row

Kalmia cuistis fr
Bouteloua hirsuta fl
allium canadense fr
Oxytropis [illegible] fr
Plantago aristata fr
Prenanthes [illegible] fr
Aristida [illegible] fl
Amorpha nana fl
Zizania aquatica fr
Oenothera [illegible] fl
Silene [illegible] fr

On flood plain, stain
Astragalus canadensis
Veronica virginica
Humulus nulus
Eryngium
Arctium lappa
circaea lutetiana
Panicum virgatum
Prunella vulgaris
Solidago canadensis
Amorpha fruticosa
Prunella bunii
Astragalus canadensis
Penstemon

2nd bot cost = 1145

Lobelia S
[illegible]
[illegible]
[illegible]
[illegible]
S. [illegible]
[illegible]
[illegible]
[illegible] 6-1123
[illegible]
[illegible]
[illegible]
Vilis, Ambrosia [illegible]
[illegible]
Verbena [illegible]
[illegible]
[illegible], [illegible]

In general:
[illegible]
Physium
[illegible]
[illegible]

also
Rifel [illegible]
[illegible]
[illegible]

In this part (all over) there are bowlders [illegible] on the ridges which the farmers do not cultivate. Hence you may see tomps

top

The ~~length~~ of the first curve with of band & represents the weight of band along left & Breaks further down the blows are lower at Smiths.

The upper W, and much open line left,

The second opening between Marshalltown & Equalizer is right below the Equalizer group.

The first is nearly 1/2 way down.

Aug. 8, 1899 Wed

Rome

Oxytropis

Condition unknown

[illegible] 2 [illegible]

[illegible]

Amorpha canescens - fr. & fl.
~~Lepachys pinnata fl.~~
Liatris cylindracea fl
" scariosa bu
Lepachys pinnata fl
Panicum virgatum fl
" crus-galli fl
Solidago rigida fl
" [illegible] fl
" nemoralis - fl
Allium stellatum bu
Brauneria angustifolia old & fl.
Aster ptarmicoides fl
" sericeus - fl.
Asclepias tuberosa fr
" syriaca fr
Bouteloua curtipendula
Stipa spartea
Andropogon furcatus fl
Elymus canadensis fl.
Poa — fr.
Coreopsis palmata fr.
30// Anemone cylindrica - fr
Lathyrus venosus - fl

Petalostemum purpureum fl
" candidum fl

[illegible]

Helianthus [illegible] fl & fr
Ceanothus [illegible]

Spartina
Solidago canadensis
[illegible]
Helianthus [illegible]

[illegible] in NE cor. sec 16 1250
Swamp [illegible] 1215
[illegible] 1238
Swamp in N.E.¼ N.W.¼
sec. 27 - [illegible] 37 = 1158

On [illegible]
[illegible] on top of cliffs
was 1123
1097
26 feet difference

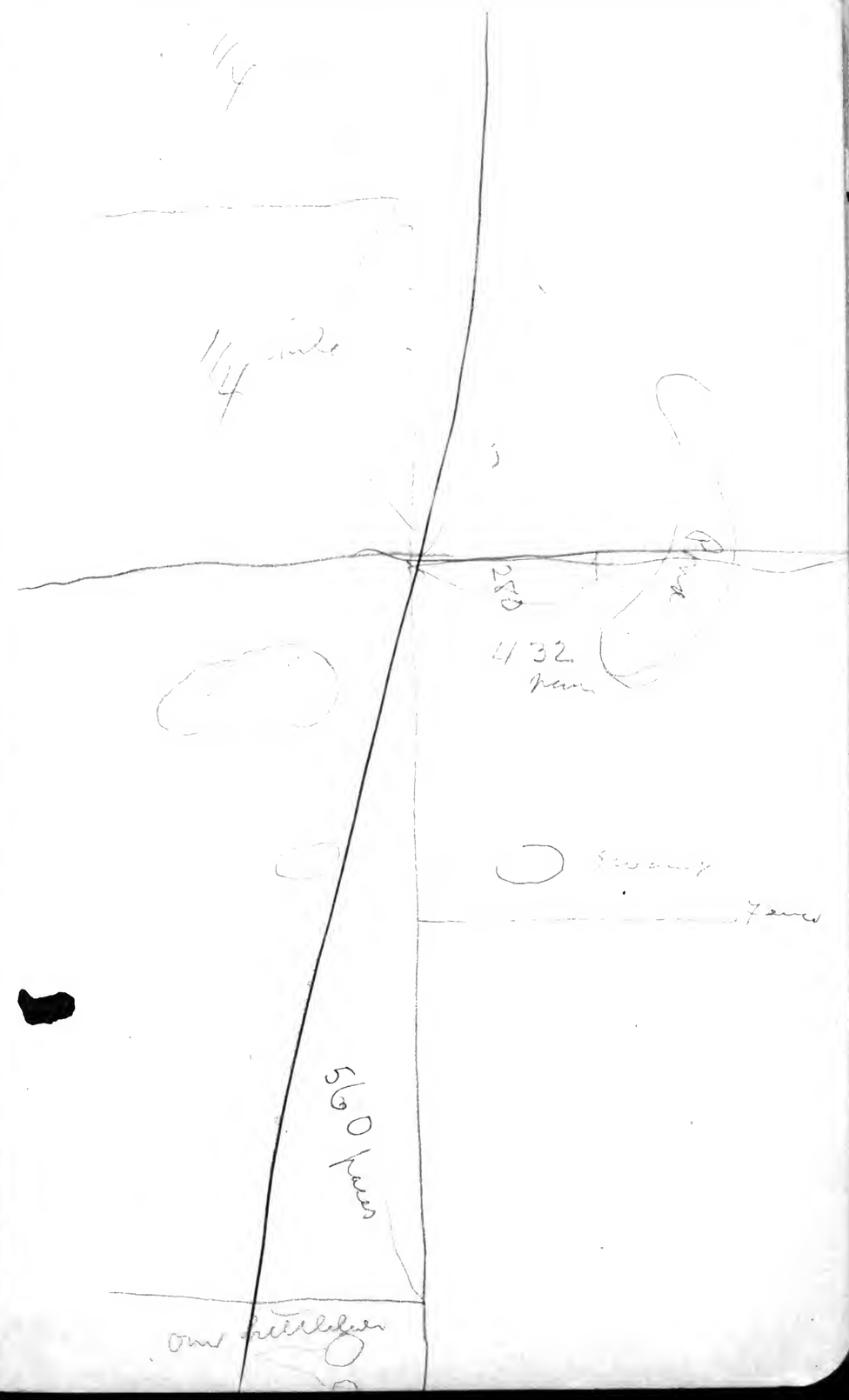
Aug 7, 1923 Sunday

Remained at camp all day packing, finished about 10 worked on [illegible] forenoon.

afternoon went out.

Readings:

Lake level	1075
Top of steps	1097
Aug clo station 2	1098-1120
At road	1130
Top of Lake	1174
to bottom of [illegible]	1187 - 1145 = 42



28 cal.

Terminal [illegible] fl.

In the [illegible] of Y in comp

There is [illegible] Myriophyllum

spicatum in flower. Also

At the [illegible] E. Oholoji
the [illegible] extends with
some interruption for about
200 yds a [illegible] angle
in road. The N. the
plane is flat & unbroken
except a few small [illegible]
Right at the angle there
is a little [illegible] & [illegible]
below angle (on the [illegible]
of road) the scarp has been
grove is now fenced by cottonwoods

a few [illegible]
A [illegible] 9 from XX
[illegible]
Below XX [illegible]
in [illegible] & [illegible] after
[illegible] below, [illegible]
ash & [illegible] commonest &
below [illegible] growing [illegible]
~~Then a higher bank~~

The [illegible]
of [illegible]
[illegible] 8
the 2 [illegible]
Then a bank at first about
12 ft high, then 6 – 8
Between it & lake a
straggling line of gnarled
quaking asp & few [illegible]
There become more abundant,
especially towards, as the
banks rise toward XXIII.
Quaking asp is also common here.

94 b lake
96 b Bank at XXIII

The [illegible]
[illegible] 95, 50 &
[illegible]
[illegible]
[illegible]
[illegible] 25
[illegible]
[illegible]
[illegible]
Pigeons [illegible] and the [illegible]
in [illegible]
[illegible]
[illegible]
[illegible] a deep [illegible]
Then [illegible] for. [illegible]
[illegible] width
just a little in top of bank.
[illegible]
20 ft & now [illegible]
on slope
[illegible]
along [illegible]
4-5 rows of [illegible]

960 – top of bank
932 – water line
27

Below Jenkins the banks become higher and steeper with appearance of gravel on top & a grove of big cottonwoods & willows evidently artificial.

All around this S.Q. part of T bay are many clear places at margin of woods, broader, – mostly cottonwoods.

Below this the banks drop down & there is a broader valley, very lovely

6-12 ft

Stone

The trees are barren, [illegible] plenty [illegible]

[illegible] The bank [illegible] flat with only sloping willow [illegible] & big cottonwood.

ash.

Below XXI there is another band back from lake, well timbered.

Then to XXII a flat with only sloping willow & green ash & on to XXII

25

At XVI The [illegible]

At XVII [illegible]

Native trees [illegible]

XVII and XVIII [illegible]

XVII - [illegible] are alone [illegible]

the same [illegible]

At XIX a group of willows. Here a causeway [illegible] [illegible] the lake. It has only a few willows at west end.

All the N. shore is the same (to road) is flat and mostly treeless except for a group of willow & green ash in the N ½ of NE ¼ of sec. 11

There are also willows & some green ash on point in NE ¼ Sec. 11

No. 14

South from the point the beach is boulders & there are abrupt banks with a mere fringe of greenash,

cottonwood

Cottonwoods [illegible]

[illegible]

Boundary [illegible] 8-12 [illegible]

Hairy [illegible]

flat [illegible]

~~The~~ lake [illegible] green ash, cottonwood & white Elm

[illegible]

and there [illegible]

[illegible]

NE ¼ [illegible] road in sec 14

The beach is almost bare.

Only a few willows.

Near a spring there are some willows & some ash, but most of these have sprung up quite recently, as before of "sandbar bridge" [illegible]

nearly all are elm & box elder.

All along [illegible] of Sampson's [illegible] there is a fine sea-shore sand ridge 2 - 4 ft. high & within it, perhaps in front of a [illegible] a sand ridge [illegible] grass, — making a double sea [illegible] ridge, or 2 ridges along side & back.

But counted the rings in a cottonwood stump, 20 in in diam., in front of Sampson's Lodge, as explained above, and found 115 rings.

There are alone ridges, then farther east, the inner large

Really a fourth inner one

Best true map about of them.

Point & [illegible] are [illegible] & are along [illegible] a bordering ridge, or old sea-shore ridge.

A bank of 10 ft. extends E. of Point XVI.

(Pt. XV [illegible]

Pt XVI marks the W side of East Bay

up to the point [illegible] hackberry & box elder [illegible] the foot & [illegible] slope [illegible] 100 yds wide

The beach where it was once connected with main lake.

At XVI are [illegible] & are along [illegible] a bordering ridge, or old sea-shore ridge.

A bank of 10 ft. extends E. of Point XVI.

Aug. 5 Tues [illegible]

[illegible]

[illegible]

[illegible]

Starts at 7.30 [illegible]

to [illegible]

[illegible] plants on [illegible]

scale on S. side of U way

E. of Crandall's Lodge.

Dredges down side [illegible]

E. of Crandall's [illegible]

Found [illegible] of [illegible]

[illegible]

collection a few [illegible]

plant.

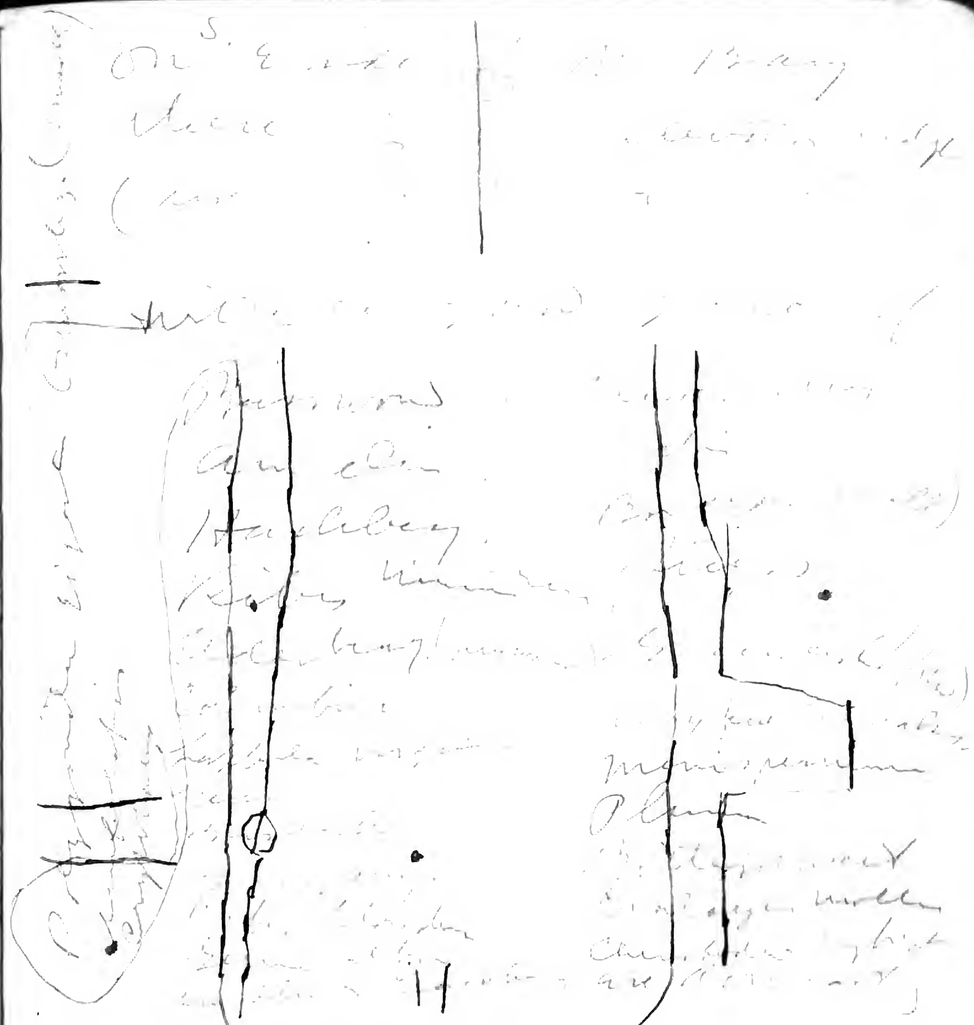
The point from Crandall's

to dam has a grove of

am. elm, [illegible] (S. amy) &

a cottonwood & two [illegible] grove.

The elms visible are [illegible]



Much [illegible]

[illegible] a [illegible]

[illegible]

The [illegible] to side

[illegible] & the [illegible]

to less than 100 yds beyond

the old Simpson lodge.

E. of Simpson's the [illegible]

At the [illegible] of west
[illegible] there
is a [illegible] 7-8 [illegible]
but no [illegible]
[illegible]
near shore
[illegible]
& [illegible] clear
water near State line
On W side [illegible]
is a grove [illegible]
[illegible]
The adjoining part of
grove W. of E. lobe is
cottonwood, green ash
Am. elm
boxelder,

Robinson Lake is now
also called Kettleson Lake.
Sunken Lake connects
with Hottes Lake.

[illegible]
Lake [illegible]
[illegible]
[illegible]
Mr. [illegible])
[illegible] (who died 3 yrs ago)
says that [illegible]
[illegible]
[illegible], but that
[illegible] is dense

Both the [illegible]
of [illegible]
in [illegible]
over grown, [illegible]
that [illegible]
common [illegible]
[illegible]
The upper part is said
to be 15 or 18 [illegible]
and slimy [illegible].
This part is chiefly [illegible]
wholly in [illegible]
The region [illegible]
of these [illegible]
Open, [illegible]
down to [illegible]
and rather [illegible].
It must be remembered
that in all places
where there are banks

(20)

[illegible]

There is one considerable [illegible],
however, namely [illegible] trees
appear only where there
is a bank, elevation [illegible] there
often [illegible] faster than [illegible]
[illegible]
protection.
Very few banks which would
shelter from [illegible] S.W. or N.E. are
without trees. In these cases probably
an accident of distribution.
It is interesting to note, too, that
steep banks will protect for a very short
distance even on the windward side.

The [illegible] part (SW)
of [illegible] lake. Robinson
lake

The ridge between
Robinson & Marble
lake [illegible] now
also between Marble
& Hollow lake & thus
leaves [illegible] & 75 ft
high, almost as little
island & lake as lop-
sided. All hollowed.

In the place marked swamp
in Carson notes & [illegible]
[illegible]
a [illegible] & medically marked,
the lake [illegible] very well
evidently were no [illegible]
Saw 2 or 3 pink Verbena
trascata

There is a good bay at
N.E. end of Marble lake
grown to [illegible] swamp. Low &
few trees — [illegible]
Another bay S. to now —
all else lands & woods

The map [illegible]

[illegible]

W. side [illegible] of
little [illegible]
high land [illegible]
is cleared [illegible], giving
a fine view [illegible]
across [illegible] lake
above it is [illegible], and
a low ridge, [illegible]
willow, [illegible], elm
friends on S. side of this
lake are also high (swamp)
& wooded.

Little Hunt Lake

Across
Bass Lake
Bamford
Ann Elm.
Green Ash
Amphedon
Plum

Swamp Plants. Marble Lake

Calopogon tuberosum
Sarracenia purpurea
Zenobia pulverulenta
Vaccinium corymbosum
Spiraea tomentosa
Lycopus virginicus
Gaylussacia frondosa
Comptonia peregrina
Aralia hispida
Rhododendron nudiflorum
Aster cordifolius
Rhododendron canadense
Pedicularis lanceolata
Acorus calamus
Heteranthera reniformis
Sagittaria latifolia
Sparganium simplex
Typha latifolia
Lycopus virginicus
Menyanthes trifoliata
Eleocharis palustris

There is an opening in wood at S. side of east lobe of Marble Lake — no trees, — a gravel [illegible] a small rift of the same sand appears at S.E. corner of Geo. Bay & the [illegible], then an abrupt bank with trees. Then a wide low marshy place with low shores gradually rising — & there is a long drain to S.W.

On west side [illegible] banks are again abrupt [illegible]

296 — [illegible] west
[illegible]
40
[illegible]

The [illegible] there [illegible] heavy [illegible] rushes, [illegible] banks. There is a bank [illegible] S.E. corner [illegible] begin.

All S., S.W., W. & N.W. shores are low, bluffs more bank gradually, & there are no trees.

Many of the [illegible] trees (among [illegible]) are dying.

[illegible]

Astoria

[illegible] usually [illegible] rocky sides chiefly.

Cottonwoods also.

The bluff runs down [illegible] & scattered [illegible]

One stands out a few [illegible] beyond into depression (Potter basin)

Shortly after passing XII we dropped into a low [illegible] Saw [illegible] a few cottonwoods

Then slopes become a little more abrupt to take of a belt of trees appearing & running into larger forest.

[illegible]

There are [illegible] rise [illegible] & abrupt, [illegible] light [illegible]

4

Saw [illegible]

Box elder
Ironwood
Am. Elm
Poplar
Hawthorn
Willow
Ribes
Elderberry
Corn [illegible]
Vitis vulpina
[illegible]
Salix [illegible]
Ampelopsis.
Verbena hastata
Pigweed

& mint

Pyrus [illegible]
Amelanchier
Crataegus [illegible]
" mucronata
Rosa blanda
[illegible]
[illegible]
Campanula
Iris [illegible]
Cryptotaenia
Cicuta
Sanicula marilandica
Zanthoxylum
Rudbeckia

Above this the slope is flat
but there is a [illegible] (very
gravelly, [illegible] ash [illegible] few
[illegible] [illegible]
[illegible] [illegible]
to see.

The ash here has been
[illegible] on E, (only) and
only.)

1 or 2 [illegible] on the
plat.

Another bank now
rises (10-15 ft) is abrupt,
with trees in its shelter.
None on top.

Salix dipsacea in shelter
of bank.

Lake 841

Banks drop to 10-12 ft.
very rain. Top of this
lower bank 857
= 16 ft above lake
Runs 12-16

There is [illegible]
[illegible]
[illegible] X [illegible]
[illegible]
(

is [illegible]
mostly
[illegible]
Lake [illegible]
[illegible]
This [illegible] XIII [illegible] where a [illegible]
ft [illegible] (25 ft) x a few [illegible]
x [illegible] on top.
[illegible]
leaves

Took bag of [illegible] they were
mainly on E. side of the [illegible]
[illegible] trees. All from bank.
just below
Pt. XIV - Higher [illegible] again
835 lake level
855

Just above Pt. 20 XVI - or at it,
865 Highest pt. so
835 far.
30

[illegible]

[illegible] 10, [illegible]

[illegible] The [illegible]

is [illegible], with [illegible]

There was [illegible] a [illegible]

a fringe of [illegible]

along the [illegible]

[illegible]

in [illegible] & [illegible] appear [illegible]

Am. el.

At x1 a [illegible] appears — 22 ft. [illegible]

829
807
22

along the 10, [illegible] but [illegible]

is [illegible]. The [illegible]

also [illegible]:

Cottonwood
Am. elm
Green ash

The [illegible]

The [illegible]

a [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

fringe [illegible]

at [illegible]

[illegible] 813
Lake 804
19

Sampling [illegible] (x) [illegible]

higher with a [illegible] band

18-20 ft [illegible]

Paddling here

Trees — [illegible]
[illegible] (few)
Green ash
Basswood (few)

A swamp lies [illegible] grove

& cuts through from shore to shore,

Polygonatum pubescens
(black)
Prunus sp.
Cornus canadensis
Thalictrum polygamum
Lonicera canadensis
Ribes glandulosum
Lapsanella ambigua
Thalictrum dioicum
Lilium philadelphicum
Geum — (big fruited)
Ribes floridum
Aralia hispida

The timber runs out towards
N.E. corner & there is a tree
(native) except a few scattering willows
etc. The region between the
two lakes is flat & sandy.

Carex
Solidago
Aster
Aster (white)
Aralia nudicaulis
Polygonum cuspidatum
Clayton virginica
Aster
Pelatostemon
Polygala polygamum
Agrostis perennans
Rhus glabra
Asclepias cornuti

Lepachys pinnata
Aralia hispida
Rosa
Thalictrum cuspidatum
Andropogon furcatus
Rhus canadensis
Ribes lacustre
Lilium philadelphicum
Asclepias tuberosa
Solidago
Desmanthus
Convolvulus sepium
Carex pedunculata

Aug. 4 - 1913 - Mon

[illegible]

[illegible]

[illegible]

[illegible] a [illegible]

[illegible]

[illegible]

On [illegible]

[illegible]

[illegible]

10 - 20 ft [illegible]

The point [illegible]

E. side, [illegible] flat and [illegible]

between [illegible] lake.

The low [illegible] bluff runs around to cut off point between the two woods.

Near the center of sec. 3 the fringe along lake is willow, elm, green ash & cottonwood.

Across the S.E. ¼ of NW. ¼ of sec. 3. the grove E. of road is mostly oak and runs along on a rather gentle slope. Probably if the higher bluffs & woods were not on W. side of the

[illegible] lake

woods [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] 6-10

in diam.

No. 5 drag [illegible] to the stream the following plants were noted.

Pignut	Number [illegible]
Red Elder	Elm [illegible]
Buckeye (dominant)	[illegible]
[illegible] elm	Sacc[illegible]
Bur oak	
Willow	

The first [illegible] right near [illegible] only a narrow [illegible] of trees, & [illegible] now the ground is [illegible] cottonwoods. Down near point there is a higher bluff but the grove continues in rather a flat place, but with bluffs 6-8 ft. high & steep.

The bank runs a little higher northward - pass about 800 - 785 10 - 15 ft. high. The woods on

Bluff [illegible] curve
Then [illegible] turns E, on
a steep [illegible]
The banks are
timbered [illegible]
[illegible]
The stop [illegible] E,
on [illegible]
another [illegible] stop
[illegible]
to [illegible]
a little timber above
Pt IX [illegible] flat, and
must [illegible] this bank [illegible]
from lake
A fringe of willows along
lake
Point IX [illegible] of lat.
the trees on flat come
to water [illegible] fringe of
green [illegible] willows [illegible]
along [illegible] bank to
road.
Beyond [illegible] grove

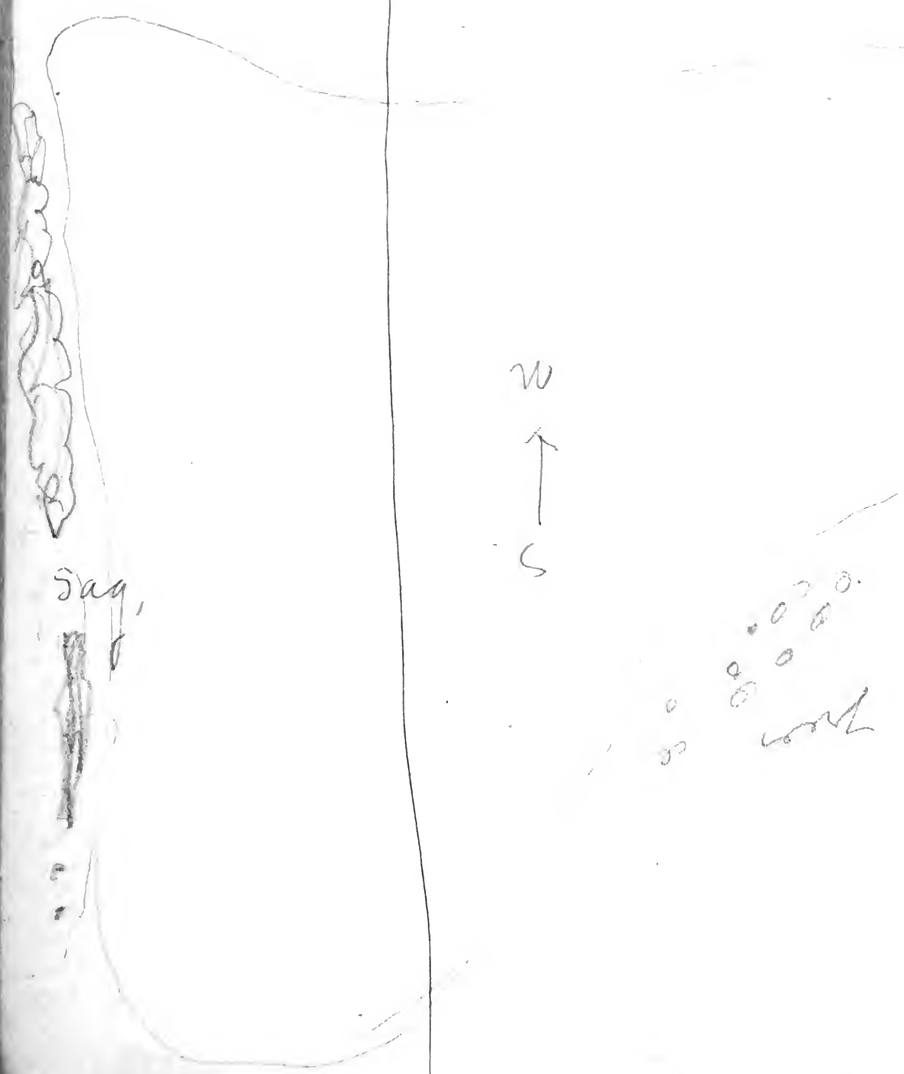
widen [illegible]
[illegible]
[illegible]
road is [illegible]
the [illegible]
where [illegible] close to
lake the [illegible]
flat [illegible]
fringe [illegible] willows.

[illegible]

The big forest [illegible]
is mixed, [illegible]
[illegible] 1 [illegible]
[illegible] and [illegible]
[illegible] Red [illegible]
[illegible], [illegible], [illegible]
(Gill) [illegible] Xanthoxylum
Ostrya Prunus virginiana
Prunus americana
Persimmon Catalpa ([illegible])
C. [illegible] Red Oak (Quercus rubra)
(small cups)

[illegible] Plane
To cross
[illegible]
[illegible] Plane [illegible]
[illegible]
S. E. [illegible]
P.Y. V [illegible]
[illegible]
[illegible] (20-30)
[illegible] higher
[illegible]
Opposite VII is a [illegible]
[illegible] more VII
[illegible] is broken.
Point VIII [illegible]
From VII to VIII [illegible]
[illegible]
[illegible]
Then a [illegible] to Pt. VIII
[illegible] VIII a [illegible]
20' [illegible] with a [illegible]
[illegible] on S. & W. On [illegible]
[illegible]

There are no high [illegible]
but [illegible]
10-15 [illegible]
[illegible]



[illegible] level [illegible]
High [illegible] 733
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] level 736
737

Above [illegible]
[illegible] P.A. stream [illegible]
along [illegible] and [illegible]
[illegible]
The banks are abrupt but not
high. [illegible]
V The [illegible] V
extends [illegible] way
back. The [illegible] this
part is broken by [illegible]
Frances has his hangar just below
P.A. V

On E. side Prairie [illegible]

a [illegible] [illegible] [illegible]

[illegible]

& 3 [illegible] [illegible] [illegible]

On W. side is [illegible] [illegible]

ridge – [illegible] [illegible] of [illegible] [illegible],

[illegible] from [illegible] [illegible]

Thus [illegible] [illegible]

a little S. of middle

the ridge [illegible]

by [illegible] connection

with [illegible] swamp.

most of the trees are N. of this.

Level of Lake = 873

Collected [illegible] shells &

living Lymnaea, [illegible]

return

Saw many birds, blue

winged teal, etc.

Trees on ridge

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Collected Vaccinium [illegible]

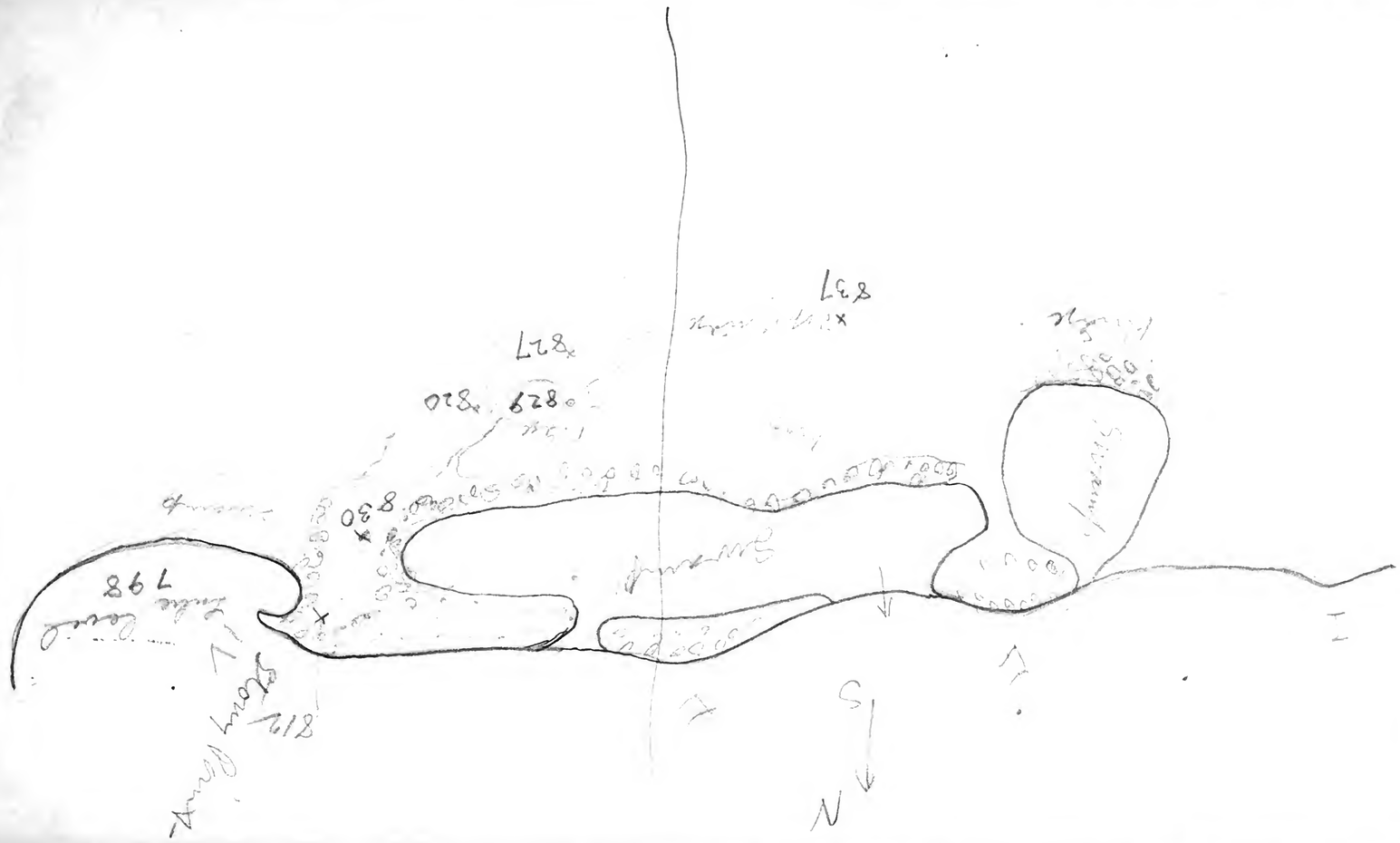
[illegible]

[illegible]

[illegible] and,

Big [illegible] of cattails in

NW corner of Lake


N
S
E
W
798
830
829
828
827
837

the trees Brot says Pleasant
Humpler flatten out.
They are growing in gravel
& [illegible] [illegible] [illegible]
could plant [illegible]
They are [illegible] washed
specimens

(at I)
The next Quad. 821
795
26 ft

is a narrow [illegible]
in shelter of [illegible]
narrow fringe of [illegible] [illegible]
& band of [illegible] (sec) [illegible]
[illegible] a [illegible], green ash
group & [illegible] and growing
Between the middle of sec.
21 (& fallen upper end of ridge
[illegible] if) & point I there
is a fine [illegible] boulder,
[illegible] the ridge, & in its shelter
a narrow fringe of green ash,
[illegible] [illegible], the willow

Between [illegible] & I & [illegible]
[illegible] & [illegible]
[illegible]
at II [illegible] & [illegible]
[illegible]
The [illegible] I
[illegible]
[illegible]
banks [illegible] & [illegible]
[illegible] with lines
[illegible] Struggles [illegible]
on S. side of Knob at II.
All shallow [illegible] S.W.
The [illegible] swamp above II
also has similar timbered ridge
[illegible] again
[illegible] fringe at [illegible]) extends
to II
Between II & IV a narrow timbered
ridge runs [illegible] [illegible]
of [illegible] [illegible].
III is a piece of [illegible] of ridge.

Collected some shells on Timber side of Twin Lakes. Hardly dare say anything in Troupers favor [illegible] carefully, [illegible] Twin Lakes are accidental.

838 Top of 2nd terrace
799 Water level
39 ft.

On this I saw Brownia,

Aster exiguus
Amerina cylindrica
" Nolina
Veronica [illegible]
Solidago [illegible]
Arlemisia (Tridentata)
Aster oblongifolius
Petalostemon purpureum
Bouteloua oligostachya
Oenothera caespitosa
Oxytropis splendens
Erigeron [illegible]
Lepidium apetalum
Aster [illegible]
Gaillardia pulchella
Potentilla [illegible]

Solidago [illegible]
Koeleria
Stipa [illegible]
Bromus [illegible]
Poa [illegible]
Agrostis [illegible]
Antennaria [illegible]
Petalostemon candidum
Monarda [illegible]
Symphoricarpos

There are [illegible] in the [illegible]
The [illegible] of ft
[illegible] in prop[illegible]
[illegible]

The stone [illegible] is mostly fragments of small [illegible], [illegible] a little [illegible] are [illegible] [illegible].
There is [illegible] the [illegible]
curve [illegible]
[illegible] is explored [illegible]
A ridge is crossed by the N.V.S. middle line of sec. 21
The band is 20 ft high & trees [illegible]
Between this band & the upper Twin Lakes there is a grass-green ice-shove ridge with small boulders. There are a few stunted cottonwoods growing along shore between mound & ½ sec. line. There are

West of

332
786
46

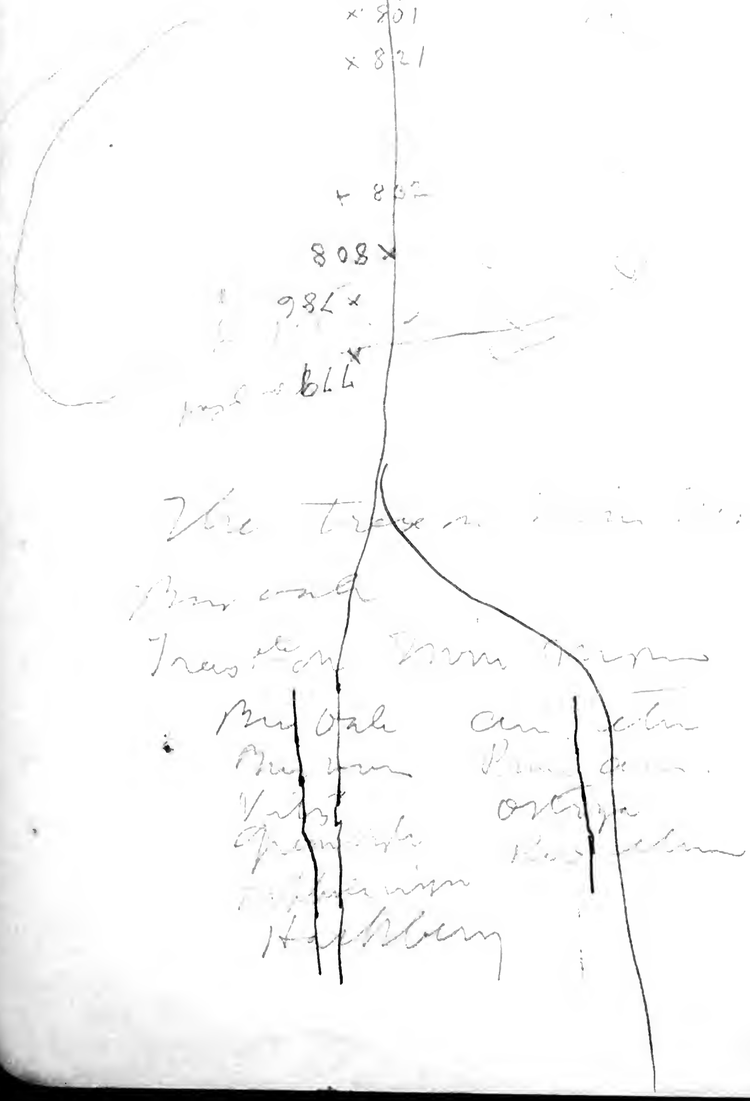
×789
×801
×821

×802

808×

987×

pole 614×

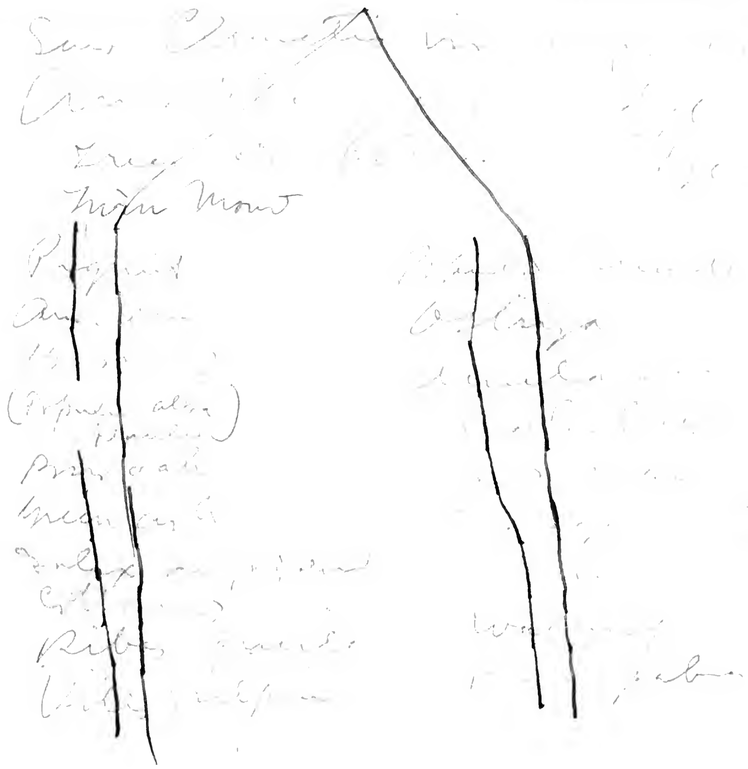


1

1

The belt of timber runs about ½ way in from mounds from window portion, back of shelter, it ridge, and then, beyond mile house, it tapers down to a mere fringe of bur oak & then green ash. The banks also run down toward mounds, and the terminus of SW. of mounds is open, with a long gentle slope, finally exploring mounds.

The fringe just SW. of mounds is green ash on bowlder ridge (ice shove) - scattered also few wahoos & cottonwoods + 1 bur oak & 3 am. elm



the

a regular [illegible] Then
1st [illegible]
2nd [illegible]
[illegible]

Lowhurst 916
Top of hill 830
86

786 = Level Stream of
E. Ohio [illegible]

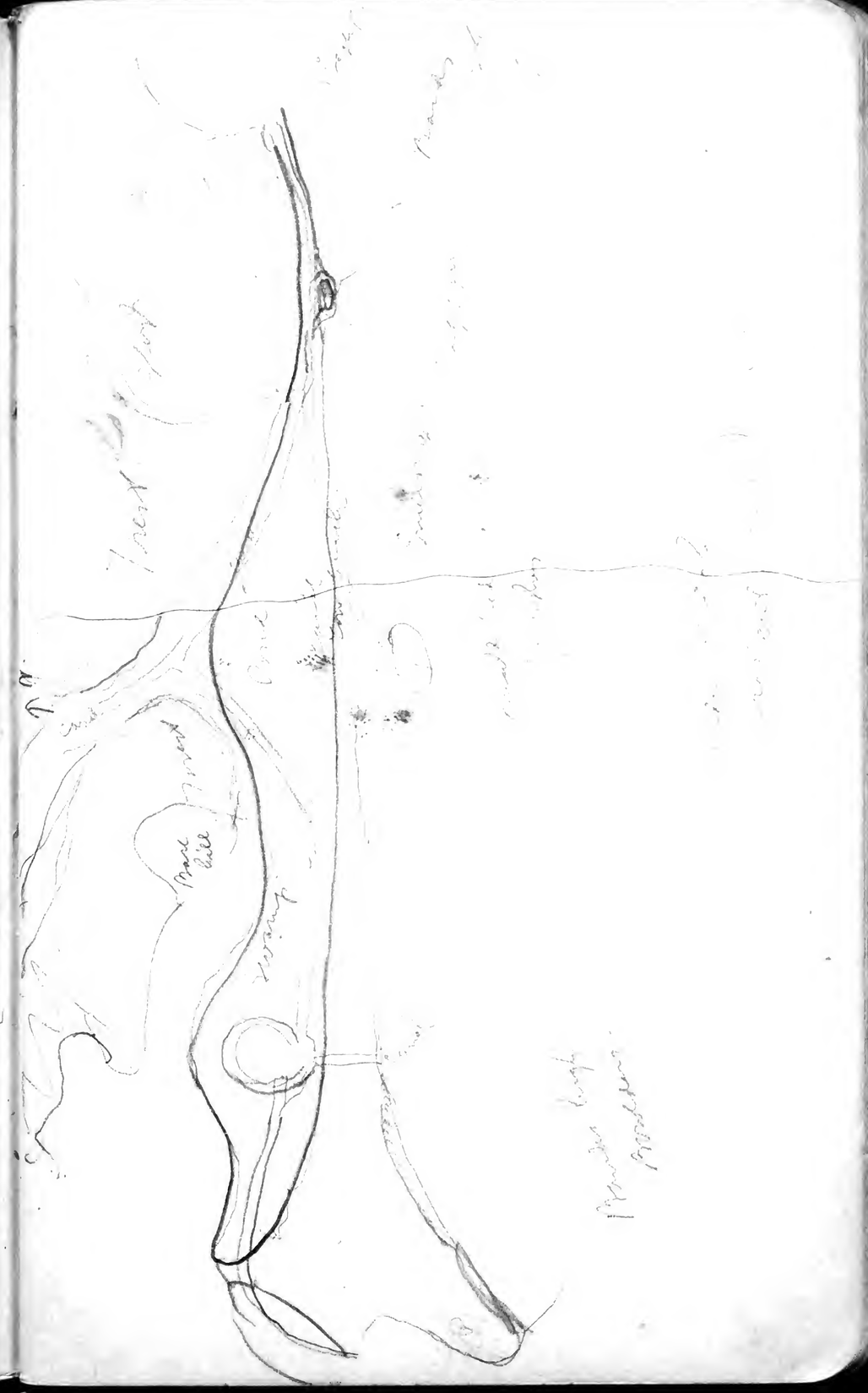
The W. line at Stream of
E. Ohio is about

The [illegible]

[illegible] We have already
[illegible]
The above from bridge to
near Twin mounds is a long
& toilsome
Much below Gen. & E. Ohio was flat
Few miles, Peter.

E & N. shores at Ewalt pt
are [illegible] & wooded.
Swamps NW, thin [illegible]
[illegible] & [illegible]
[illegible] along N. side [illegible]
W. [illegible] through from
NE. comes in
along N. side [illegible]
near mouth there are
knobs & ridges 15–25 ft
above [illegible] On sec line
at sec corn

Looking E. the [illegible] side of canal show almost
all bur oaks, – a pure
view of them



Elm first growth

Astragalus
Brunella (Prunella)
Cretaceum mollis
" funiculat.
Bromus
Agrostis Lin (a weed)
Thalictrum alpinum
Calamagrostis
Galium aparine
Alnus folia
Bryophyllum
Geum ad
Lepachys
Achillea

Rubus glandis
Geum
Rubus glandis
Vicia sativa
Elm
Agrostis
Bidens
Aspidium
Acer tomentosum
Thalictrum alpinum
Smilacina bifolia
Symphoricarpos vulgaris

A level [illegible] Cove
[illegible] nearly
A sandy beach
Beach [illegible]
A level
[illegible] gull [illegible] & nearly
[illegible]
[illegible]
[illegible] nearly [illegible] high
of 4-6 ft wide.
A rock bar in [illegible]
Gull ft. a low, bouldery at point sandy
& gravelly [illegible] N.W.
Scrub [illegible] oaks & [illegible]
are [illegible] to east [illegible] gull Dry.
grass &.
At [illegible] N.W. high bouldery trees
& bowlders,
Cove [illegible] in a row.
Eagle [illegible] & trees
Top [illegible]
S. side of gull ft. shows one ridge
of sand (ice shove) 2-4 ft high &
[illegible] side
Beach at ft. has sand grass, Potentilla
anserina Odaxina etc Hordeum jubatum
Rapistrum tenuum, Salsola,

Aug. 2 1913 Sat

[illegible]

[illegible]

Falls [illegible] few [illegible] fairly

[illegible]

The [illegible] are well

[illegible]

bank at O [illegible]

a few [illegible]

This point O is 26 ft [illegible] water

Between O + P, the [illegible]

sandy, + only a few [illegible] + willows [illegible]

trees [illegible]

The canal [illegible]

Located big [illegible]

Beach at [illegible] 764

Top of bank S. 781

17

South the bank rises 3 or 4 ft high

At cove [illegible] bank N. + S.

Boulders.

Took lichen. Tree E. on bank

we exposed all around

lichen all around.

Aug. 1 Worked with Jenny

Elev. [illegible]

[illegible] 750

[illegible] 830

[illegible]

The [illegible]

in 60 [illegible]

[illegible]

15

Eclundin [illegible] in 4

Water level 1780

Top of [illegible] 810

[illegible]

The woods run along

about 300 yds from

lake shore

Found Rimodine (?)

on exposed limestone boulder

along lake, (See spec.)

Found that the [illegible]

large [illegible] in ravine

N. of lower beach on lake

has been cut away.

Found Amelanchier along

bluff, lower end. (See spec.)

Potentilla [illegible]

Lower end [illegible]

[illegible]

Ex [illegible] pachyo[illegible]

Blank [illegible] by [illegible]

of Hence Point.

amelia
Park to Emanuel
Bay.

Fish Pond
2 pages

Bass
Sunfish
Polygonum
Scirpus
Osmunda
Scrophularia marilandica
Osmunda
Carex
Xanthoxylum
Butternut
Osmunorhiza
Alder shrub

Thalictrum dasycarpum
Amorpha fruticosa
Cornus
Green ash
Am elm
Vitis vulpina
Lycopus (uniflorus, etc)

Cyperus
Solanum
Impatiens fulva
Alisma Plantago
Sagittaria cuneata
Scirpus atrovirens
Polygonum hydropiper
S. of Polygonum

The branches
PA. mm
They are about XV 15-16 ft.

Cyperus strigosus
Penthorum sedoides

all
Elymus
Amphicarpa
Zizania
Erigeron canadensis
Erigeron philadelphicus
Echinocystis
Rubus occidentalis
Rubus
Ulmus
Acer
Fraxinus
Populus
Salix
Carex
Cratægus (on bank)
Tilia
Quercus
Sorbus
Pyrus
Prunus
Ilex
Cornus
Viburnum
Rhus
Ribes
Cratægus

July 30

Water level — 1015

Station 25 on bank

Station 26 [illegible]

Center [illegible] = 1018

Sta 27 — 1024

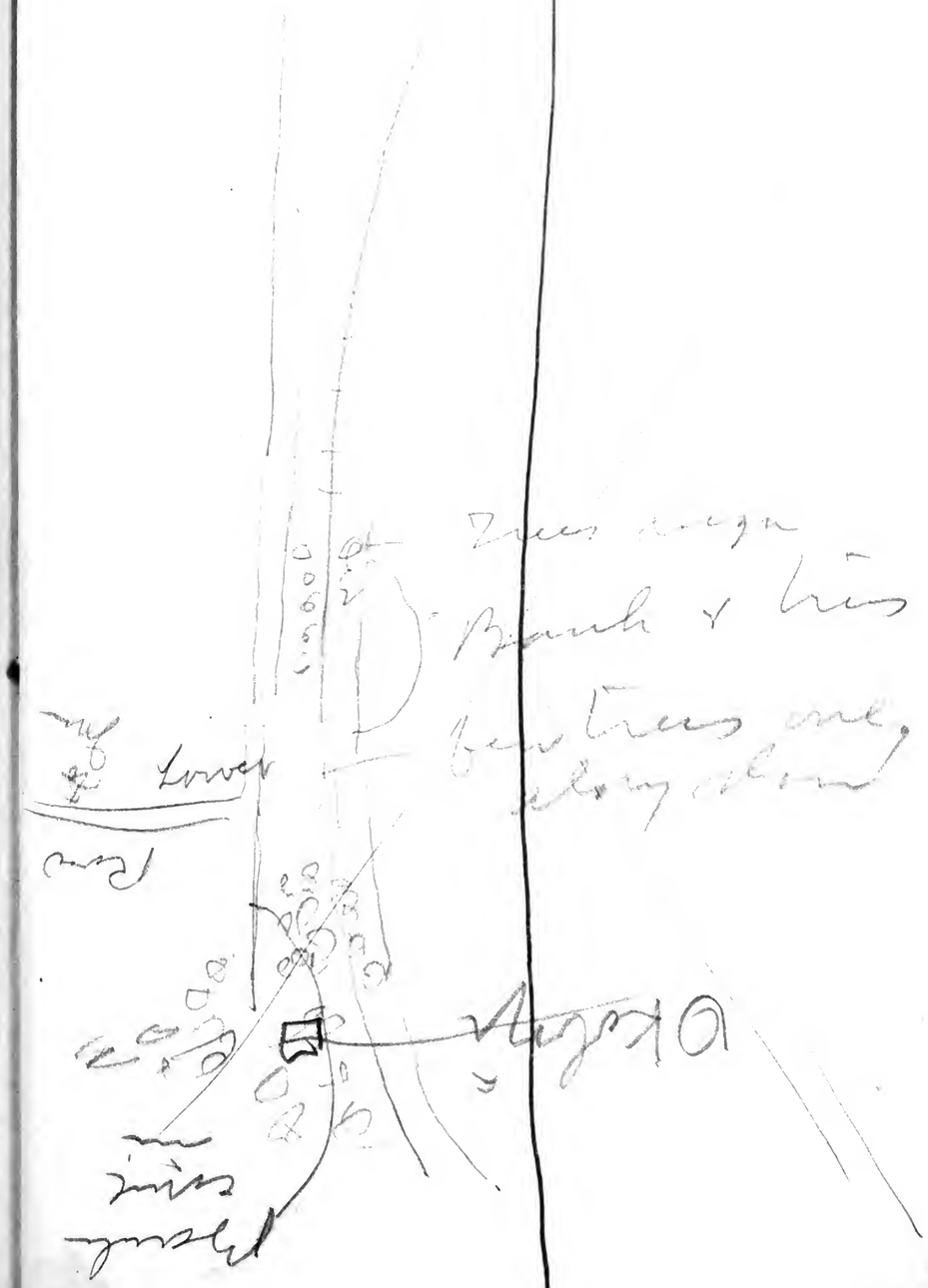
Sta 28 — 1065

[illegible]

[illegible]

July 30

Rod



July 31-1913

[illegible]

[illegible] bluffs are [illegible] built. but on part [illegible] Pallo[illegible] [illegible] Craft [illegible] Angle [illegible] 28 [illegible] water level was 798

In the grove [illegible]

[illegible]
Green [illegible]
Bassovia
Crataegus [illegible]
" [illegible]
" [illegible]
" [illegible]
Bur oak
am [illegible]
Azimuna triloba
Lapsula virgin
Silene [illegible]
Elymus virginicus
Bromus [illegible]
Gaillardia aristata
Polygala [illegible]
Thalictrum dioicum
Cryptotaeni —

Stiff
[illegible]
Two [illegible]

many of the outlying buildings
were partly burned down
but rebuilt.
The order is irregular
& the surface rocky
there being together
a gradual rise to
see. line by the
[illegible]
[illegible]
[illegible] (wooden) in main
for [illegible]
[illegible]
Tobacco [illegible]

W. line middle line of
sec. 10 & 15 strikes
lake the bar making this
only & ~~only~~ a few straggling
only appear
Near W. line of sec 15
there is a steep bank
10-15 ft - with small
grove of beech, an
am. elm, Vitis vulpina
& green ash.

a few willows ([illegible])
[illegible]
The [illegible] 4 to 5 [illegible]
point is gradual (or &
steep & rocky) [illegible]
Entire [illegible] & [illegible]
no [illegible] [illegible]
7 or 8 [illegible] [illegible]
[illegible]
even [illegible]
& a little [illegible]
Am. elm, cottonwood, [illegible]
They are [illegible]
West end the stream is very
flat & rises [illegible]
gradually. [illegible]
some distance except one occasional
cottonwood or shrub.
Roots, [illegible] - [illegible]
elevation -

(over)

South of draw a good bur
oak grove. Bluffs [illegible]
here [illegible]
ridge [illegible] about 1050 [illegible]
[illegible]
[illegible] the [illegible] on
this ridge.
Bluffs [illegible] &
strip of timber [illegible]
about 100 yds wide.
Outposts probably
cut.
Present outposts all
bur oak, with many
lichens (see sack.)
At middle of sec 10
Timber widens W.
On S. slope of bluff (top)
bur oaks in open also
have many lichens
(more light) – Few
in deep woods.

The bluff [illegible]
[illegible]
Opposite [illegible]
In woods [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
Urtica [illegible]
Parietaria pennsylvanica
~~[illegible]~~
[illegible]
[illegible]
virg.
[illegible] virg [illegible]
[illegible] (rubs)
S[illegible] the surface
is [illegible] broken, & at
2 points [illegible] prairie
tongues from SW. into
woods. In sec 10. at entrance
to a tongue [illegible]
[illegible] was very abundant,
just beginning to flower.

for 150 yds 20 of [illegible]
& along a compact bluff
here about [illegible] 1 ft
[illegible] high, I saw
cottonwood
green ash
Crataegus mamillata
Rubus neglectus
Amorpha fruticosa
Elaeagnus angustifolia
Plum
wild grape
Ulmus pumila
Prunus
Black walnut
Rubus gracilis
Vitis vulpina

On rec. line bluffs
run about 100 yds W.
(some partially cleared)
& N. of section line on
lake bluff a dense
thicket, shrubs, etc.
a road on section line.
Right on section line &
just N. of it a prairie
opening runs almost

To lake shore (between 20 & 21)
[illegible] first [illegible]
[illegible] S. [illegible]
just S. of the [illegible] and
[illegible] [illegible]
greenish [illegible]
The few [illegible] [illegible]
[illegible] N. of [illegible] are [illegible]
about 3 rods S. [illegible]
is a [illegible] [illegible]
& [illegible] [illegible]
side or a [illegible]
approach is in general
Bordering just on lake N. & S.
ridge is [illegible]
The little boy has Lemna
& Sparganium in it.
[illegible]
Scirpus atrovirens
[illegible] in water
[illegible] perfoliata
[illegible] [illegible]
[illegible] [illegible]

[illegible] page for no. 4.

This station has 2 large
Salix amygdaloides

On 3/4 rec. [illegible] & [illegible] appear on upper slope